



IRAQI  
NATIONAL STANDARD GUIDELINES  
FOR  
THE DESIGN AND MANAGEMENT  
OF  
PUBLIC SECTOR WEBSITE  
AND  
CONTENT MANAGEMENT

Final Draft  
January 2014  
Version 1.0

Iraqi Government Guidelines Series

Authentication Iraqi Government Information

This is the Official Iraq Government edition of this publication and is herein identified to certify its authenticity. Use and printing is for Iraqi National e-Governance Steering Committee.

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## I- Background

The World Wide Web is poised to be the most widely used medium for implementation of e-governance initiatives. Realizing the importance of this medium a large number of websites belonging to various government entities have been published on the web. In spite of fairly wide presence of website in Iraq, the potential of this technology to ensure maximum reach of government information and service to the citizens of Iraq has not reached where it can make a major impact- for governance, decision-makers, citizens and many others. Public entities websites are problematic because it is fragmented, held within units' silos and frequently left to individual employees to manage. Adequate online strategy, planning, website and formal classification systems are generally not applied to the wide range of content and users continue to struggle with the basics of handling electronic content life cycle.

However, to make this effective delivery channel a need for wide coherent in plan, design, manage technical and access standards guideline across all governments' websites.

Ultimately, the website guideline based on best practices include variety standards, including online strategy and audience analysis, website planning and developing and managing, information/data architecture and web content classification and development and management, website analysis design and graphic design, technical architecture, workflows architecture, website analysis, security, accessibility, bedding and outsourcing, hosting, marketing and communications, training, etc.

It's worth to mentioned that, the government of Iraq has defining Government Interoperability and National Enterprise Architecture as one of the key priority projects of e-governance program to realize Iraq's e-Governance vision of harnessing ICT tools to improve basic services to all and to promote all-round good governance, including increased public participation, better social equity and justice as well as a general enhancement of the transparency and effectiveness of public institutions in order to build the necessary platform for a competitive, robust and knowledge-based economy.

A key player for coordinating and working on e-Governance program in Iraq at the federal level is the national e-Governance steering committee. The national e-Governance steering committee- that established by the cabinet order no 46 on February 2009- is chaired by the minister of science and technology and is widely represented by the federal ministries and organisations. Iraq has also created a Strategic Coordination Team, which assembles representatives from all provinces to coordinate e-Governance program at the local level.

Since then Iraq has managed to achieve a comparably good state of e-governance through several further activities, such as the launching of the Iraqi e-Governance Iraq one stop window containing informational and interactive online services ([www.egov.gov.iq](http://www.egov.gov.iq)), Conducting of a vast Training-of-Trainers program on e-governance which strengthened the capacity of e-governance all over Iraq and resulted in the training of 10,000 professionals.

The Iraqi government has been successful in developing and launching the necessary Government Interoperability Framework and National Enterprise Architecture (GIF/NEA). Iraqi GIF/NEA is a set of policies, guidelines and standards of information and communication technology, which ensures sharing and integration of information and services among the governmental institutions from one side, and between citizens and the business sector and national and global organizations from the other side. The GIF addresses technical, semantic interoperability policies and specifications. The NEA addresses high level nation-level architecture that helps connect public administration information systems across Iraq and facilitates the interoperability of e-services for citizen. This GIF/NEA is based on open standards. The categorization of the standards in this GIF/NEA is based on international best practices.

The objectives of the government's modernisation programme are to improve the service to citizens and business, and at the same time increase the efficiency of public administration, increase returns of ICT investments and enhance the culture of sharing information.

In order to promote the development of a national enterprise architecture, the developed GIF/NEA principles includes:

- Ensure the sustainability of flow of information and data among federal government institutions, local communities and citizens.
- Ensure the use and adaptation of applications and their responses to changing requirements and demand.
- Commitment to develop the necessary standards and contexts that facilitate re-use of data structures and related electronic services.
- Adopt open standards wherever possible in the development of technical specifications to encourage competition of all the sectors.
- Adopt proprietary standards, which are acceptable and approved, supported by major specialized information technology and communications companies.
- Ensure the secure exchange of information and data in accordance with security standards adopted to prevent any penetration, interception or modification.
- Ensure privacy of data and information related to citizens, government institutions and the business sector, in accordance with the Constitution and the laws in force and the imposition of limitations on legal access to information or publication.
- Leverage public-private partnerships to reduce cost, time and effort and to maximize effectiveness and efficiency by combining expertise and experiences in both government and the private sector.

Moving forward, the Iraqi GIF/NEA programme implementation and execution is in the planning phase, GIF/NEA is the strategy that Iraqi government is increasingly looking towards to be used by public organisations.

As part of the e-Governance Programme's next steps to provide more practical guidances and official public organisations compliance with the GIF/NEA, UNDP assists the Government of Iraq in the development of this National Standard Guidelines for the Design and Management of

Public Sector Websites and Content Management at National, Enterprise and Local Government Levels.

## II- Purpose

The purpose of this National Standard Guidelines for the Design and Management of Public Sector Websites and Content Management at National, Enterprise and Local Government Levels is to have consistent and standardized websites for all public sector organizations in Iraq. The guidelines will:

- Help public sector organizations focus on the delivery of online information and services that are aligned with the needs of citizens, businesses and other target audiences of an organization.
- Ensure that there is a consistent approach to the development and management of websites across the public sector
- Increase the ease with which users can access and find information and services, and contribute to the “branding” of the Iraqi government as a single and integrated entity.

The guideline is providing a clear roadmap to follow based on good practices in aligning with Iraqi context. It provides website guidelines in a phased lifecycle approach; Planning, Development and Design, Implementation, Operation and Maintenance and Continuous Development. Furthermore, the guideline provides information on the use of social media to make government information more accessible, and make government more consultative, participatory and transparent. Good use of social media can help government to better understand, engage with and attract the attention of target audiences. The end of the document has convenient checklists for assessing your website's compliance with the guidelines documented here.

The Guidelines were developed to assist those involved in the creation of Web sites to base their decisions on the most current and best available evidence. The Guidelines are particularly relevant to the design of online content and information-oriented sites, but can be applied across the wide spectrum of Web sites including offline (intranet).

Two case examples have been developed to showcase the usage of these guidelines. At the national level is the Ministry of Municipalities and Public Works, and at the local level, the Ninevah Governorate.

## III- Part 1: Planning

The most common reason for the failure of a Web site is not technology. It's not user experience either. Web sites most often fail because—before the first line of code was written, the first pixel was pushed, or the first server was installed—nobody bothered to answer two very basic questions:

- . What do we want to get out of this web site?
- . What do our users want to get out of it?

By answering the first question, we describe the website objectives coming from inside the organization. The second question addresses user needs, objectives imposed on the product from outside. Together, product objectives and user needs form the strategy plan.

This part will provide information on how:

- Establish Web Governance Strategic Planning and Purpose Identify and analyse target audience
- Organize the web team
- Plan the budget
- Coordinate with stakeholders and manage change
- Plan contracts for outsourcing
- Register domain name
- Consider legal issues
- Develop key performance indicators

### 1.1 Establish a Web Governance Strategy

#### Ø What It Is

A strategy is a plan to achieve a result. It can be made for any type of project, from simple, informal activities like event planning to very complex and formal undertakings, such as organization reform. The goal is always the same: to achieve targeted and measurable results. Your web strategy can follow a similar pattern that describes:

- Your current situation
- The goals
- The path to the goals

#### Ø Why It's Important

A web strategy is important because it:

- Provides a documented plan for you and your web team to reach stated goals
- Aligns activities with the expectations from your web team and stakeholders
- Gives direction to your web team to satisfy target audience needs

Plan to meet your objectives with measurable results, which include achieving your organization's mission and satisfying your target audience's needs.

## Ø How to Implement

One way to develop a strategy is to use the *Situation-Target-Proposal* method:

- a. Situation – Evaluate your current situation
- b. Target – Define your goals
- c. Proposal – Plan a route to achieve the goals

### a. Evaluate your Current Situation

In evaluating the current situation, it is important to examine the difference between the current status (the “as is” scenario) and the desired one (the “to be” scenario).

Two different methods can be used with some level of desired redundancy between them. They are the SWOT Analysis and the ITPOSMO Analysis.

#### - SWOT Analysis

The SWOT analysis looks at the strengths (S), weaknesses (W), opportunities (O) and threats (T) affecting the selection of options for your web strategy.

Use the table below to complete your SWOT Analysis. The first row represents the strengths and weaknesses of the internal situation. This includes looking at the capabilities of the web team members, the leadership and the partner organizations; the type of services being provided, the quality of services and reputation; the internal systems, organizational structure and processes; and the financial status of the organization and partners.

The second row represents the opportunities and threats in the external environment that can affect the project during its implementation. This includes looking at the:

- Policies and laws – local and international
- Economic situation – economic growth rates, market and industry trends, employment statistics and trends
- Social situation – literacy rates, gender relations, community cohesiveness, use of technology, media freedom

- Political situation – interest groups, politics in power, and decision-making at local and national levels
- Cultural situation – norms, values, beliefs, language and ethnicity

How do you get the information needed for your SWOT analysis? For your internal strengths and weaknesses, consult your colleagues in your organization, and review organizational plans and policies, and any surveys done on your target audience. For external opportunities and threats, look at national surveys, ICT statistics and trends, sector-specific studies, and local, national and global policies and agendas.

In conducting the SWOT analysis, it is important to collect as much relevant data as you can for both the internal and external environments. The more recent data you are able to find the better for decision-making on the most relevant, feasible and effective strategy to take.

| SWOT ANALYSIS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                                                                          |                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Favourable Factors                                                                                                                       | Unfavourable Factors                                                                                                |
| <b>Internal Factors:</b> <ul style="list-style-type: none"> <li>• Organization policy</li> <li>• Organization structure</li> <li>• Organization processes</li> <li>• Resources (human, financial, material)</li> <li>• Capacity (knowledge, skills, experience)</li> <li>• Leadership</li> <li>• Management style</li> <li>• Trustworthiness and Reputation</li> <li>• Partnerships</li> <li>• Type and quality of services</li> <li>• Customer Orientation (to what extent are you focused on your target audience needs)</li> </ul> | <b>STRENGTHS</b><br><i>Any internal factors that can help to develop website, e.g. strong support from decision makers for a website</i> | <b>WEAKNESSES</b><br><i>Any limitation or barrier that makes website development difficult, e.g. lack of funds</i>  |
| <ul style="list-style-type: none"> <li>• External Factors:</li> <li>• New or revised policies and laws</li> <li>• Economic factors</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                         | <b>OPPORTUNITIES</b><br><i>Any favourable situation in the external environment that affect the development of website, e.g.</i>         | <b>THREATS</b><br><i>Any unfavourable situation in the external environment that is potentially damaging to the</i> |

|                                                                                                                                                                                                                                                                                                                                                                                     |                                                         |                                           |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------|
| <ul style="list-style-type: none"> <li>• Social factors</li> <li>• Political factors</li> <li>• Cultural factors</li> <li>• Demographics</li> <li>• Physical environment</li> <li>• ICT infrastructure, penetration and access</li> <li>• ICT and social media trends</li> <li>• Security</li> <li>• Skills/Literacy</li> <li>• Local, national and international events</li> </ul> | <i>broadband connection is becoming more affordable</i> | <i>website, e.g. poor hosting service</i> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|-------------------------------------------|

There are four combinations of strategic options that can result from the SWOT analysis.

- The S-O (Strengths-Opportunities) option: This option involves using your strengths to take advantage of the opportunities. When the team or organization is dominantly strong and opportunities in the external environment are high and favourable, the S-O strategy is definitely a priority. This option is likely to give a quick return on investment and is relatively easy to implement. It can also be easily justified for immediate action.
- The S-T (Strengths-Threats) option: This option involves using your strengths to avoid real and potential threats. When the team or organization is dominantly strong and the threats are high this may be the option to choose. Ways to use your strengths to turn threats into opportunities should be considered in this option.
- The W-O (Weakness-Opportunities) option: This option involves using opportunities to overcome the weaknesses that you are experiencing. When the team or organization is dominantly weak and the opportunities are potentially attractive as options, it may likely produce good returns if internal capabilities are improved. This option is potentially more stimulating and rewarding than the S-O option because of the change, challenge, surprise tactics and benefits from addressing and achieving improvements.
- The W-T (Weakness-Threats) option: This option looks at how can you minimize your weaknesses and avoid threats. When the team or organization is dominantly weak, this is potentially a high-risk option.

#### - ITPOSMO Analysis

This method is related to the in-depth analysis of seven internal dimensions (i.e., inside the ministry or governorate). They include:

- Information (quantity and quality)
- Technology (hardware, software, network)
- Processes (work flow and decision-making processes)
- Objectives/Values (its importance to senior officials, web team, stakeholders, target audience, and their goals for the website)
- Staffing and skills (technical, management, operational, interpersonal skills)
- Management systems and structures (organization structure, policies, standards)
- Other resources, time and money

These seven dimensions are necessary for understanding the design-reality gaps in web governance projects.

ITPOSMO is a very analytical and powerful tool that is able to identify gaps and agree on their level of seriousness by giving a score for each dimension. The tool also considers initiatives to reduce the identified gaps (e.g., if we identify a gap in the available staff skills, we will launch a training initiative). In addition, it allows for Risk Analysis that gives an idea of the chances for the strategy to succeed.

Using each of the seven ITPOSMO dimensions in turn, analyse two things:

- The organisational reality relating to that dimension that exists right now at the time of analysis.
- The conceptions/requirements for the development of a website.

Use the table below to complete the ITPOSMO Analysis. For each one of the dimensions, think about what is needed to develop the website and to what extent that it is the same or different from the current situation in the organization.

| Dimensions  | Design (To Be)                                       | Reality (As Is)                                                                                                       | Gap Score<br>From 0 to 10<br>(0% no gap 70%<br>big gap) |
|-------------|------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| Information | What information/content is needed for the websites? | What information/content is currently available?<br>How complete, accurate, relevant and updated is this information? |                                                         |

|                      |                                                                                                                                                                                   |                                                                                                                                                                                             |  |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| Technology           | What hardware, software and networks are needed for the website (type and amount)?                                                                                                | What hardware, software and networks are currently available?                                                                                                                               |  |
| Processes            | What processes are required for web governance? (i.e. decision-making processes for website development, management and continuous improvement, and content development workflow) | What are the current processes for web governance?                                                                                                                                          |  |
| Objectives & Values  | What are the desired objectives and values of web team, staff members, senior officials, partners and target groups?                                                              | What are the current objectives of web team, staff members, senior officials, partners and target groups?<br>How do they currently value the website? How important is the website to them? |  |
| Staffing & Skills    | What is the desired staff numbers and skill sets for website development, maintenance and continuous improvement?                                                                 | What is the current staff numbers and skill sets available for website development, maintenance and continuous improvement?                                                                 |  |
| Management Systems & | What is the desired management system and organizational structure for web governance (e.g. decentralized/centralized, outsource/in-house, agile approach)?                       | What is the current management system and organization structure?                                                                                                                           |  |
| Other Resources:     | What is the desired amount of initial funds, recurrent funds, and time available for website development, management and continuous improvement?                                  | What is the current amount of funds and time available for website development, management and continuous improvement?                                                                      |  |

Give the percentage rating to indicate the size of the design-reality gap on that dimension. The rating for each dimension's gap can be anywhere on a scale from 0% to 70%. For example:

| Overall Rating | Likely Outcome                                                                                                      |
|----------------|---------------------------------------------------------------------------------------------------------------------|
| 57 - 70        | Your project will almost certainly fail unless action is taken to close design-reality gaps.                        |
| 43 - 56        | Your project may well fail unless action is taken to close design-reality gaps.                                     |
| 29 - 42        | Your project might fail totally, or might be a partial failure unless action is taken to close design-reality gaps. |
| 15 - 28        | Your project might be a partial failure unless action is taken to close design-reality gaps.                        |
| 0 - 14         | Your project may well succeed.                                                                                      |

Another tool that is useful here is benchmarking. This involves assessing and comparing your organization's functions, systems and practices against another organization with similar characteristics and activities. It will be useful to learn the good practices from another organization that is a leader in public sector website development.

Once you have identified your strategy options, you can use and prioritize them to define your goals.

#### b. Define your Goals

The goals/objectives are those things that need to be achieved in order to reach our destination.

In order to develop strategic objectives that are aligned with the organization need, a number of elements need to be considered:

- Vision and the National e-Governance Strategies and Plan 2012-2015
- Organization strategic direction and goals
- Organization structure and mandates
- Stakeholders and targeted audience

Think about how your website will meet your organizational goals. Think also about how your website can meet the needs and expectations of your target audience.

These objectives for your website can be agreed upon by having meetings with the website stakeholders (senior managers, business units, IT units and target audience). It is important that all stakeholders agree on the final objectives of the website.

A helpful mnemonic for developing goals is that they should be SMART (Specific, Measurable, Attainable, Relevant and Time-Bound) as the following description:

| SMART      |                                                                                                                                     |                                                                                                                                                                                                                                                                                                                                                                                       |
|------------|-------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Area       | Description                                                                                                                         | Questions to Answer                                                                                                                                                                                                                                                                                                                                                                   |
| Specific   | Be specific, not general.                                                                                                           | <p>A specific goal will usually answer the five "W" questions:</p> <ul style="list-style-type: none"> <li>• What: What do I want to accomplish?</li> <li>• Why: Why is it important to accomplish the goal?</li> <li>• Who: Who is involved?</li> <li>• Where: Where is the initiative located?</li> <li>• Which: Which requirements and constraints should be considered?</li> </ul> |
| Measurable | Be concrete. Measuring progress is supposed to help a team stay on track, reach its targets, and experience the joy of achievement. | <ul style="list-style-type: none"> <li>• How many?</li> <li>• What change is expected? (e.g. percentage increase, reduction, improvement)</li> <li>• How will I know when it is accomplished?</li> </ul>                                                                                                                                                                              |
| Attainable | Be realistic. Identify practical ways to achieve objectives.                                                                        | <ul style="list-style-type: none"> <li>• How can the objectives be accomplished?</li> </ul>                                                                                                                                                                                                                                                                                           |
| Relevant   | Set goals that matter to your organization, business unit, senior managers, team and target audience.                               | <ul style="list-style-type: none"> <li>• Does this seem worthwhile?</li> <li>• Is this the right time?</li> <li>• Does this match our needs?</li> <li>• Is it applicable in the current situation?</li> </ul>                                                                                                                                                                         |
| Time-bound | Commit to a deadline.                                                                                                               | <ul style="list-style-type: none"> <li>• When will the objectives be achieved?</li> </ul>                                                                                                                                                                                                                                                                                             |

You can divide your objectives into: short-term goals (up to 1 year), medium-term goals (1-3 years) and long-term goals (3-5 years). You can also define achievements for business, operations and target audience. For example:

| Business                                                                                                                                | Operations                                                                                                                   | Target Audience                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Serve citizens effectively</li> <li>• Reduce the number of phone calls taken by the</li> </ul> | <ul style="list-style-type: none"> <li>• Provide information to target audience</li> <li>• Provide information to</li> </ul> | <ul style="list-style-type: none"> <li>• Make it easy to find what I want</li> <li>• Make the information</li> </ul> |

|                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| support team <ul style="list-style-type: none"> <li>• Reduce cost of distributing press releases and public announcements</li> <li>• Strengthen existing customer loyalty</li> <li>• Discover new target audience online</li> <li>• Provide specialized and tailored content to key groups</li> </ul> | government employees <ul style="list-style-type: none"> <li>• Develop skills within the organization to administer a website</li> <li>• Develop single sign-on functionality</li> </ul> | understandable and relevant <ul style="list-style-type: none"> <li>• Find up to date, relevant information as quickly as possible</li> <li>• Be informed of latest news and events</li> <li>• Help in performing core service functions such as filling and submitting forms</li> <li>• Be connected, supported and valued</li> <li>• Provide an FAQ section</li> <li>• Provide a framework that structures content for the users and not the business division</li> </ul> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### c. Identify the Path to the Goals

Once the goals have been defined you need to develop a strategy document that will guide you, the web team and other stakeholders towards achieving your goals.

It is important to document the planning process and the results from all the analyses conducted. It is also important that the strategy document is not created in isolation within the IT unit, but involves other stakeholders within and outside the organization. Share your strategy document widely and have it endorsed by senior managers, so that team members and managers understand all work activities.

Re-visit your strategy document from time to time to:

- Modify goals as needed, and
- Make sure you are on track to reach project goals

The key actions required to achieve your goals include the followings that are described in the following sections:

- Identify and analyse target audience
- Organize the web team
- Plan the budget
- Coordinate with stakeholders and manage change
- Plan contracts for outsourcing
- Register domain name
- Consider legal issues

- Develop key performance indicator

## 1.2 Identify and Analyse Target Audience

### Ø What It Is

After establishing the objectives for your website, you need to decide what information and services you will have on your website by identifying and analysing the audience needs.

### Ø Why It's Important

Generally, there is a shift from what information and services governments can provide to what their target audiences really need. Previously, the availability of online public services (“supply-side”) was the primary focus in e-governance policymaking, but over the past years, the usage of e-governance information and services (“demand-side”) has also become a priority issue. An increasing number of governments are recognizing that the benefits of e-governance are determined by the number and type of users of these information and services, and the frequency of their use.

Target audience analysis helps you decide what should be on your website—both now and in the future—and helps you set publication priorities, in alignment with the audience needs.

### Ø How to Implement

One way to identify and analyse target audience is to undertake the following steps:

- a. Step 1 – Determine the audiences
- b. Step 2 – Develop the inventory
- c. Step 3 – Set priorities

#### a. Step 1 – Determine the Audiences

- Use Worksheet 1 below to define all the audiences who do, should and might visit your website. Determine the potential size of those audiences, to help you prioritize.
- Think about audiences in a broad sense, such as the citizens who use your organization's services, people seeking information, other public organizations, employees, potential employees, vendors, strategic partners and various other groups.
- Look at your email and talk to other units including customers service units. Think about citizen groups, business groups and other government organizations (examples of target audiences include: doctors, teachers, investors, driving license applicants, homebuyer,

visually impaired citizen, contractors, and strategic partners, government organisations, employees, job seekers, media agencies, researchers).

#### List of Target Audiences

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.
- 7.
- 8.
- 9.
- 10.

#### How to find out about your target audience

There are a number of research methods used to gather information about website audiences, and their needs and preferences. One way is to discuss it and collect the information from the people in your organization. For example, the citizen desk offices, media unit, business units and the staff who have direct contact with the different target audiences.

If possible, you should directly ask the target audiences about their needs and preferences. But this can take time and be rather expensive. Options include:

- Interviews (by phone or face-to-face) with members of the public
- Use of social media to solicit comments and suggestions from members of the public
- Focus group discussions with representatives of business and industry areas, or members of the public
- Questionnaire survey for the public (online, face-to-face or by post)- a sample lists of questions you can ask are available in Annex.

Sometimes consulting even just a limited number of target audiences can reveal important issues that have been overlooked by your organization.

You should also consider that there may be a difference between what your organizations wants on the website and what your target audiences want. You need to be prepared to cater for them, if it fits with the goals of your organization.

There are two main aspects to focus on: the type of activity they are likely to undertake when visiting your website, and the audience profile.

The type of activity can generally be categorized in two ways:

- Seekers of information – looking for a specific piece of information.
- Users in need of services – looking to undertake an online transaction through a website (e.g. application for licenses or paying bills).

By analysing the information and services that your target audience uses, their level of satisfaction, and their preferences on how they wish to obtain the information or services, you can prioritize the type of information and services that you will have on the website.

#### b. Step 2 – Develop Your Inventory

- Use the table below to create your inventory. List the audience groups you defined in step 1 down the left side of the table
- Next, list the various components of your organization across the top. Components include programmes, services, information, policies, documents, etc.

To develop this list of components, begin by looking at your organizational structure. Refer to or draw a diagram of your organizational structure that shows the relationships and hierarchy of different units in an organization. Think about the roles and responsibilities of the different units and the different components that they produce (e.g. programmes, services, information, policies, documents, etc.) Talk to staff members in the different units and ask about what they do. It is important that your website shows the full range of information and services that your organization offers, and not just highlighted news and events.

- Complete the table by answering two questions:
  - o What does this audience group want to know from this component?
  - o What does this component want to tell this audience group?
 List broad categories such as press releases, budget documents and publications.
- Include both content that currently exists on your website, and content that you may need to create.
- Address common requests, by reviewing customer questions from e-mail, focus groups, phone calls and surveys. Look at your search logs to identify popular information. Talk to people who answer the telephones or act as desk receptionists to see what people ask for most.
- Note: Do not include information and services that your organization is not mandated to provided.

| Audience    | Organization Components<br>(programme/service/information/publication/documents) |  |  |  |  |  |
|-------------|----------------------------------------------------------------------------------|--|--|--|--|--|
|             | Tender                                                                           |  |  |  |  |  |
| Contractors | Audience                                                                         |  |  |  |  |  |

|  |                                                                                               |  |  |  |  |  |
|--|-----------------------------------------------------------------------------------------------|--|--|--|--|--|
|  | wants to be informed about tender and know about the requirements and criteria for selection. |  |  |  |  |  |
|  | Component wants to tell contractors to develop and submit relevant proposals.                 |  |  |  |  |  |
|  |                                                                                               |  |  |  |  |  |
|  |                                                                                               |  |  |  |  |  |
|  |                                                                                               |  |  |  |  |  |
|  |                                                                                               |  |  |  |  |  |

### c. Step 3 - Set Priorities

Use the table below to help you set priorities for the type of information and services that you will have on the website.

- In column 1, list all the components you identified in step 2—this is your inventory.
- In column 2, note whether the information or service is available:
  - already exists on the website;
  - exists in some form but is not on the website; or
  - has to be developed.
- In column 3, note whether the information is:
  - Priority 1 – Mandated by law or by your organization (e.g. regulation to release budget information)
  - Priority 2 – Mission-critical and essential for programme operations (i.e. information or services that are directly tied to your mission and/or strategic plan)
  - Priority 3 – Frequently requested information or services that will improve business processes and/or customer service to the public (e.g. most commonly used forms, documents, applications, transactions, etc.)
  - Priority 4 – Other information
- Some inventory items may fall into more than one priority. Assign them the highest priority.

- In column 4, assign a publication target for every inventory item that is not already posted on the website.

| Inventory                | Do we have this information / service already?<br>Choose from:<br>1. Already exists on website<br>2. Exists but not on website<br>3. Does not exist and needs to be developed | Priority – Choose from:<br>1 = Mandated by law or by organization<br>2 = Mission-critical / essential for programme operations<br>3 = Frequently requested information or services<br>4 = Other information | Publication target                  |
|--------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| e.g. Organization budget | 2. Exists but not on website                                                                                                                                                  | 1. Mandated by law                                                                                                                                                                                          | Publish on website by December 2013 |
|                          |                                                                                                                                                                               |                                                                                                                                                                                                             |                                     |
|                          |                                                                                                                                                                               |                                                                                                                                                                                                             |                                     |
|                          |                                                                                                                                                                               |                                                                                                                                                                                                             |                                     |
|                          |                                                                                                                                                                               |                                                                                                                                                                                                             |                                     |

### 1.3 Organize the Web Team

#### Ø What It Is

Define the role of each team member involved in the website development project, and the organization of the team.

#### Ø Why It's Important

Irrespective of your website scale, there are a number of essential functions that must be available at the start to ensure professional management of the whole process.

#### Ø How to Implement

##### a. Create the Web Team and Define Tasks

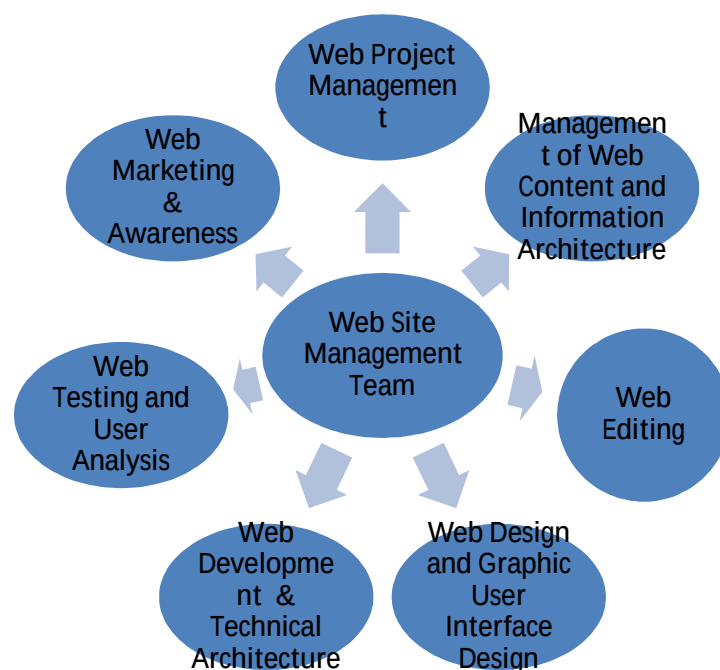
The roles of a web team are examples of the type of work performed by the people who create and manage a website. A single person can be responsible for more than one of the roles

outlined in this section. The roles you implement in your organization to support your website are determined by the size and complexity of the system being deployed. Not all the following roles are required for every website, but all aspects of these roles must be considered during any system deployment. For example a simple site may just require one person to execute all of the functions. In enterprise-level website projects, there may be a team of contractors collaborating to develop and maintain the website alongside your internal staff.

To start with, you need to define the role of each of the teams involved in the website project and the organization of the teams. Some web stakeholders examples include:

- Executive sponsors – The owners and drivers of the project
- Web Site Management Team – Responsible for the day-to-day management, analysis, and construction of the new website
- Reference group – Business unit representatives consulted to ensure that their needs are addressed
- Focus group – User representatives consulted to ensure that the new website is user focused

The figure below shows the main roles in an ideal web site management team. Note that the Web Project Manager is core to the whole process. Within your organization, you must assign a Web Project Manager to control and oversee the website development and management and quality process. Even if you decide to outsource the entire web work, a Web Project Manager will be required to work with the outsourcing agency to make sure that the website addresses the requirements of the organization.



What follows is a brief description of these ideal roles:

| Roles                                                  | Responsibilities                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Skills and Qualifications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Web Project Management                                 | <p>The Web Project Manager should:</p> <ul style="list-style-type: none"> <li>• Define the scope and managing the project implementation in aligns with the business requirements. And ensure that the project has the optimum level of human, financial and physical resources.</li> <li>• Manage web team.</li> <li>• Track progress and communicates with the executive sponsors and other stakeholders.</li> <li>• Oversee the website development process including its architecture and design.</li> <li>• Manage the content through entire life cycle and insure it's update, manage web deployment, installation and maintenance, etc.</li> <li>• Manage the continuous updating and improvement of the website.</li> </ul> | <ul style="list-style-type: none"> <li>• Solid experience in web development projects, including planning, design, content, technology, and monitoring and evaluation aspects.</li> <li>• Interpersonal and leadership skills to motivate the web team and promote team work, and manage stakeholder collaboration.</li> <li>• Project management skills.</li> <li>• Team management experience.</li> <li>• Technical/business writing proficiency.</li> <li>• The ability to communicate effectively in both business and technical realms.</li> <li>• Knowledge of emerging developments in standards, devices, mobile technology, cloud computing, etc.</li> <li>• Knowledge of online trends, including social networking, user-generated content, etc.</li> </ul> |
| Management of Web Content and Information Architecture | <p>The web content manager be responsible for:</p> <ul style="list-style-type: none"> <li>• Identify and analyse the business and audience content/information needs and ensuring that the website meets business needs and requirements.</li> <li>• Plan and organize the website structure and navigation system. And develop content categorization schemes, consistent site terminology, and site architecture diagrams and search techniques.</li> </ul>                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>• Proficient and experienced in the development of the information architecture/business analysis/ audience analysisi for public sector websites—for multiple languages and multiple devices.</li> <li>• Strong analytical, communication and documentation skills.</li> <li>• A solid understanding of the principles of accessibility and usability and related laws (copyright, open data and data protection).</li> <li>• Preferably experienced in</li> </ul>                                                                                                                                                                                                                                                              |

|             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|             | <ul style="list-style-type: none"> <li>• Set the policies, structure and responsibilities of the content management and development on the web through it's entire life cycle vis. creation, update, audit, approval, publishing and archival.</li> <li>• Determine and manage the web editors from business units and workflow required for the creation and approval of various content types.</li> </ul> <p>However, these tasks can be done in cooperation of the media unit at public sector organisations.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p>knowledge management.</p> <ul style="list-style-type: none"> <li>• Knowledge and experience in developing strategies for content management and workflow for managing content. And able to give clear written instructions and guidelines</li> <li>• Experience with Experience with multimedia content and content management system. And writing and editing for the web, and for multiple devices.</li> <li>• Able to work in a collaborative environment.</li> </ul> |
| Web Editing | <p>The web site need to have a web editing manager responsible for:</p> <ul style="list-style-type: none"> <li>• Oversee the ongoing creation of content for the website, and ensure the editorial quality of the website. And coordinate with web editors from various units.</li> <li>• Edit content (the language, style and format) to ensure that it is relevant to target audiences, is accurate and of high quality.</li> <li>• Understand and able to apply accessibility and usability standards to web content.</li> <li>• Develop and regularly update the website editorial and style guide.</li> <li>• Review images, audio and video content to ensure that they are acceptable.</li> <li>• Manage the translation of content and ensure that they convey the same meaning and is of high quality.</li> <li>• Review metadata tags on content.</li> <li>• Test the appearance of web pages on multiple browsers and devices.</li> </ul> | <ul style="list-style-type: none"> <li>• Experience with writing and editing for the web, and for multiple devices.</li> <li>• Experience with multimedia content.</li> <li>• Understands the use of metadata and taxonomy.</li> <li>• Experience in using a content management system.</li> <li>• Able to work in a collaborative environment.</li> <li>• Attention to detail.</li> <li>• Ability to manage time, Prioritize tasks and work under pressure.</li> </ul>     |

|                                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                     | <p>A Web Editors can be assigned from various business units as a Web coordinator and web editor for the relevant unit's content. The content editor's role will include responsibilities for copy-editing , proofing, checking for correctness, managing the content collection, adapting textual and graphic material to the standards and templates, etc.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Web Design and Graphic User Interface Design</p> | <p>Web design involves two key aspects:</p> <ol style="list-style-type: none"> <li>1. The graphic user interface (GUI) design for the entire website</li> <li>2. The graphical and multimedia elements for the website such as the creation of images, animation and videos.</li> </ol> <p>The Web Designer and Graphic User Interface should be responsible for both these aspects:</p> <p>Graphic User Interface (GUI):</p> <ul style="list-style-type: none"> <li>• Be responsible for the overall look and feel of the website, including the development and modification of web design templates / style sheets.</li> <li>• Create the user interface design, font and colour palette standards.</li> <li>• Work with the Usability Specialist to apply standards for web usability and accessibility to the design interface.</li> <li>• Work with the Information Architect to develop the website and navigation system.</li> <li>• Work with the Web Content Manager to plan the layout of content in different languages.</li> <li>• Develop website prototypes for</li> </ul> | <ul style="list-style-type: none"> <li>• Proficient in the use of web design tools/environments.</li> <li>• Capable of taking the visual interface design from analysis/inception to implementation.</li> <li>• Understand and able to apply accessibility and usability standards to web designs.</li> <li>• Experience in developing websites for multiple devices.</li> <li>• Experience in designing for multi-lingual websites.</li> <li>• Experienced in the use of industry standard web design applications.</li> <li>• Knowledge of different web-testing tools and their appropriate application.</li> <li>• Creative and imaginative.</li> <li>• Good team-working skills.</li> <li>• Able to simplify complex ideas into easy-to-understand diagrams.</li> </ul> |

|                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                      |
|------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------|
|                                          | <p>testing and conduct tests on design options.</p> <p>Graphical and multimedia elements</p> <ul style="list-style-type: none"> <li>• Develop and incorporate graphics design and multimedia (images, sound, music, videos, animation) on the website.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                      |
| Web Development & Technical Architecture | <p>A team of Technical Architects should be responsible for designing and developing the overall website coding and server topology and security required for the entire system and the architecture of the servers that make up the system.</p> <p>The technical architecture team can include Technical Architects, Web code developers, Database Architects, Security Architects, Performance Engineers, and other resources as required. Together they are expected to:</p> <ul style="list-style-type: none"> <li>• Determine and administrate server architecture.</li> <li>• Determine and administrate database architecture.</li> <li>• Determine integration strategies between different applications and platforms.</li> <li>• Determine and administrate security architecture.</li> <li>• Determine and administrate content platform architecture.</li> <li>• Determine delivery strategies.</li> <li>• Determine system and manage maintenance strategies and performance.</li> <li>• Be responsible for developing website page coding, designs and wireframes into website page templates ready to be filled with</li> </ul> | Proficient and experienced (where relevant, preferably certified) in the development tools required. |

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                               | <p>content.</p> <ul style="list-style-type: none"> <li>• Create content management items such as folders and workflows.</li> <li>• Create features and functionalities for the website, e.g. for login, search, print, bookmarking, online payment system, etc.</li> <li>• Apply search engine optimization tactics</li> <li>• Resolve any technical problems</li> </ul>                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Web Testing and User Analysis | <p>The web tester should:</p> <ul style="list-style-type: none"> <li>• Develop website prototypes for testing.</li> <li>• Conduct tests to ensure that the website meets the needs of users with no functionality error, and users are able to find the information and services they need, and complete tasks quickly.</li> <li>• Test the appearance of web page on multiple devices.</li> <li>• Test the usability and accessibility of the website, report on results of usability tests and recommend ways to improve website.</li> <li>• Develop usability standards and guidelines for web designers and web content managers.</li> </ul> | <ul style="list-style-type: none"> <li>• Knowledge of different web-testing tools and their appropriate application.</li> <li>• Familiar with testing requirements at the different phases of the website lifecycle, and be proficient in producing the necessary reports.</li> <li>• Have a good understanding of usability and user-centre design principles, and able to apply these principles to public sector website content and services.</li> <li>• Proficient in the required research methods, user analysis and usability testing.</li> <li>• Excellent communication skill and a team player.</li> </ul> |
| Web Marketing / Awareness     | <p>The function involves an awareness programme geared towards marketing the website to the intended end users internally and externally. This aspect is normally performed by the Communication Specialist who should:</p> <ul style="list-style-type: none"> <li>• Develop and implement a strategy to promote the website externally prior to its official launch and periodically after that ties in with new information, services, features, and improvements made</li> </ul>                                                                                                                                                              | <ul style="list-style-type: none"> <li>• Excellent communication skills and able to manage the expectations of senior management, internal staff, and other stakeholders.</li> <li>• Experience in developing and implementing an integrated communication strategy for online and offline initiatives.</li> <li>• Experience in search engine optimization and has an excellent understanding of search engine friendly web design.</li> </ul>                                                                                                                                                                       |

|  |                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                            |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p>to the website.</p> <ul style="list-style-type: none"> <li>• Develop and implement a plan and awareness activities to promote the website internally to gain staff acceptance of the website and the new way of working.</li> <li>• Develop both online and offline strategies to promote the website.</li> </ul> | <ul style="list-style-type: none"> <li>• Experience with social media strategy development and execution is a plus.</li> <li>• Have strong links with different media agencies.</li> </ul> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### b. Staffing Recruitment Decision

To cover all these tasks, resources need to be allocated and people identified to carry out the work, both in the short and in the long term. In order to do so, you need to decide what you want to outsource (by hiring another public agency or a private company to do it), and what you want to do in-house (by using the internal resource that can be made available within your organization).

Sometimes, both approaches—in-house and outsourcing—are used. A typical example:

- The first stages of the design and implementation of a website are often assigned to professional web designers outside the organization.
- The hosting and maintenance of servers, which can be complex and rather expensive to run, is also very often outsourced, unless the organization is very large or needs to control their servers directly (e.g. for security or legal reasons).
- Content development and management is instead often done in-house, as it requires knowledge and expertise that can be found more easily within the organization than outside it.
- But external agencies are brought in for specialist work such as search engine optimization or user testing.

In the case of in-house solutions:

- Evaluate whether it is possible to assign roles to existing staff, or if you need to employ new staff.
- This depends on the workload generated by the website: if this can be sustainably integrated into present workloads, then you may choose to work with existing staff.
- But it is likely that you will need extra resources to run a website properly, and you might consider employing new staff.
- You could also consider recruiting a suitable person from within the organization (the advantage is that they already know the organization very well).

As a website is a long-term investment and requires constant maintenance and review, if you opt for in-house solutions, you can try to make sure that website-related roles are integrated into the job descriptions of the staff employed, and that sufficient time and incentives are provided in order to carry them out, including on-the-job training.

For guidelines on outsourcing see part 2: Contracts for Outsourcing.

### c. Training Plan

The staff in your organization will probably not have all the skills required to develop and manage a website. Therefore, a training plan is essential to ensure that those involved in the development and management of your website have the necessary skills and knowledge.

There are four steps to developing a training plan

- Step 1: Determine what training is needed
- Step 2: Determine who needs to be trained
- Step 3: Determine the methodology for training
- Step 4: Draw up a plan

#### Step 1: Determine what training is needed

To identify where the skills gap is, review the table above with the roles, responsibilities and qualifications, and compare that with the current roles, responsibilities and qualifications in your organization.

#### Step 2: Determine who needs to be trained

Indicate which individuals and groups will participate in the training. Your training may be organization-wide, geared toward a team or unit, or designed specifically for entry-level employees.

Group the trainees by training type. Some members of the organization may need simple overviews, whereas others involved in the day-to-day completion of tasks may require in-depth training. For example, if a web content management system is being introduced, training on how to use it should be provided to the entire staff. The training course, however, should be tailored according to how different groups will be using the web content management system. A Web Content Manager will need to understand all aspects of the system, including the setting up of workflows, access permission, metadata, version control and content archiving. However, a Content Author will only need to understand how to create and edit content.

The table below provides some typical training needs for each role that will help to determine who needs what type of training.

| Roles                                                  | Typical Training Needs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Web Project Manager                                    | <ul style="list-style-type: none"> <li>• Project management methods and tools</li> <li>• Leadership skills</li> <li>• Business analysis skills</li> <li>• Team management skills</li> <li>• Communication and presentation skills</li> <li>• Monitoring and evaluation skills</li> <li>• Information architecture and knowledge management</li> <li>• Content Management standard and content life cycle and workflow</li> </ul>                                                                                                                                                                                       |
| Management of Web Content and Information Architecture | <ul style="list-style-type: none"> <li>• Research and analysis skills</li> <li>• Knowledge Management and Information Architecture</li> <li>• Content Management standard and content life cycle and workflow</li> <li>• Communication, monitoring and evaluation skills</li> </ul>                                                                                                                                                                                                                                                                                                                                    |
| Web Editing                                            | <ul style="list-style-type: none"> <li>• Content lifecycle and content management methods and tools</li> <li>• Knowledge and skills in developing and managing content workflow</li> <li>• Knowledge and skills in developing and maintaining metadata and taxonomy</li> <li>• Knowledge and ability to apply standards for usability and accessibility to web content</li> <li>• Skills in writing and editing for websites</li> <li>• User analysis and testing methods</li> </ul>                                                                                                                                   |
| Web Design and Graphic User Interface Design           | <ul style="list-style-type: none"> <li>• Designing for the web, for multiple languages and multiple devices</li> <li>• Knowledge and ability to apply standards for usability and accessibility to web design</li> <li>• User analysis and testing methods</li> </ul>                                                                                                                                                                                                                                                                                                                                                  |
| Web Development & Technical Architecture               | <ul style="list-style-type: none"> <li>• Knowledge and skills in developing and maintaining the technical architecture for website including: <ul style="list-style-type: none"> <li>o Server architecture</li> <li>o Database architecture</li> <li>o Security architecture</li> <li>o Content platform architecture</li> <li>o Coding of applying international website standards and protocols</li> <li>o Search engine optimization</li> </ul> </li> <li>• Integration of different applications and platforms</li> <li>• Knowledge and application of different technical tests and checks for website</li> </ul> |
| Web Testing and User                                   | <ul style="list-style-type: none"> <li>• Knowledge and ability to apply standards for usability and</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

|                                       |                                                                                                                                                                                                                                                                                                                                    |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Analysis                              | accessibility to web content <ul style="list-style-type: none"> <li>• User analysis and testing methods</li> </ul>                                                                                                                                                                                                                 |
| Web Marketing / Awareness Specialists | <ul style="list-style-type: none"> <li>• Skills in marketing, branding and awareness raising</li> <li>• Knowledge and skills to develop marketing strategy and awareness campaigns</li> <li>• Knowledge and skills in planning and executing the use of social media</li> <li>• Knowledge in search engine optimization</li> </ul> |
| Organization Staff                    | <ul style="list-style-type: none"> <li>• Awareness of information and services on website</li> </ul>                                                                                                                                                                                                                               |

### Step 3: Determine the methodology for training

This step looks at how the training will be conducted.

- Will the training be organized in-house and conducted by in-house or external trainers.
- Alternatively, your organization may sponsor staff member's participation in relevant training courses and conferences outside the organization.
- Will it be a short training course or longer term mentoring and coaching.
- Opportunities for self-learning is also important. A lot of skills required for website development and maintenance can be obtained on-the-job through work experience. As part of on-the-job training, ensure that some time is given to the web team for self-learning, particularly by studying the vast materials that are available online on different aspects of website development and maintenance, or enrolling in a relevant online course.
- Include a training component in contract with outsourced agencies. It should emphasize the provision of training to relevant staff on the outsourced task, and the development of training manuals with the intention that the organization can perform the outsourced tasks in-house themselves when they have adequate human and financial resources.

### Step 4: Draw up a plan

The table below can help you to draw up your training plan.

| Area of Training | Trainees | Trainers | Description of Method | Schedule |
|------------------|----------|----------|-----------------------|----------|
|                  |          |          |                       |          |
|                  |          |          |                       |          |
|                  |          |          |                       |          |

## 1.4 Plan the Budget

### Ø What It Is

Development of an approximation (estimate) of the costs of the resources required to complete project activities.

### Ø Why It's Important

Creating and maintaining a website costs money, and you should make sure you budget for these costs appropriately. Most of the expenses are human resource-related, but you should also budget for technical costs, and unforeseen circumstances (e.g. technical problems, unexpected requirements, training due to staff turnover, etc.).

### Ø How to Implement

Estimate the cost by splitting into the following categories:

- Internal staff costs
- Strategy and planning
- Design and build
- Hosting and infrastructure
- Content provision
- Testing and evaluation

| Cost Category         | Category Element                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Internal Staff Costs  | This includes: <ul style="list-style-type: none"><li>• Staff in the web team working full-time on the website</li><li>• Staff outside of the web team working in communications, IT, policy and other functions. They may not necessarily work on the website full-time.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Strategy and Planning | This includes strategic work before the website is built or redeveloped, ongoing planning and project management.<br><br>This includes: <ul style="list-style-type: none"><li>• Strategy development and planning, e.g. organization of meeting or hiring a consultant to develop a feasibility study for outsourcing web hosting</li><li>• Research for developing website strategy and design, e.g. online surveys, user research, trends analysis benchmarking, interviews, focus group discussions, and other research methods</li><li>• Documentation of technical and creative specifications</li><li>• Project management</li><li>• Procurement</li><li>• Communication and promotion (brochure, advertisement, launch event)</li></ul> |

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | <ul style="list-style-type: none"> <li>• Change management</li> <li>• Training</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Design and Develop         | <p>This includes the creative and technical work in producing or updating the website.</p> <ul style="list-style-type: none"> <li>• Design: development of website information/content architecture and wireframes/prototypes</li> <li>• Compliance with web standards, accessibility and usability</li> <li>• Bug fixes</li> <li>• Revisions</li> <li>• Search engine optimization</li> <li>• Website coding</li> <li>• Building website features and functions, e.g. images, video, audio, animation, presentation, downloads, forms, search, online transactions, RSS feeds, feeds from external sites, subscriptions, discussion forums, webchats, blogs, wikis, social bookmarking, tagging, link with social networks like Facebook, Twitter and YouTube, online polls and surveys, “rate this page”</li> </ul> <p>If an external consultant or agency is hired to design and build the website, the cost should be included here.</p> |
| Hosting and Infrastructure | <p>This includes the ongoing software, hardware and hosting costs associated with the website.</p> <ul style="list-style-type: none"> <li>• Hardware costs (computers, servers, connections)</li> <li>• Software costs (web design software, content editing software, picture editing software)</li> <li>• Hosting costs (provide file storage and connect the site to the Internet)</li> <li>• Technical support costs (technical help in case of software or hardware failures, general hardware and software maintenance)</li> <li>• Domain name registration costs</li> <li>• Back-end component of site – content management system, database, analytics, e-commerce</li> <li>• Back ups</li> <li>• Security</li> </ul>                                                                                                                                                                                                                |
| Content Provision          | <ul style="list-style-type: none"> <li>• Content management: Development of editorial and style guides, and managing workflow</li> <li>• Text</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | <ul style="list-style-type: none"> <li>• Images (creating images, licensing images, photoshoots)</li> <li>• Audio content (creating and licensing)</li> <li>• Video content (creating and licensing)</li> <li>• Legal requirements e.g. accessibility statement, copyright, disclaimer, privacy statement, terms of use</li> <li>• Editing</li> <li>• Translation</li> <li>• Review and approval of existing content</li> <li>• Accessibility, which may include: transcripts of audio content, audio description, captioning</li> <li>• Content updating</li> <li>• Metadata and taxonomy creation and updating</li> </ul> |
| Testing and Evaluation | <ul style="list-style-type: none"> <li>• Technical testing: system architecture testing, security testing, browser capability testing, quality assurance, load testing, code validation</li> <li>• Usability testing: user testing, expert review</li> <li>• Accessibility testing: user testing, expert review, conformance inspection, assistive technology testing</li> <li>• Research into site usability and user satisfaction, e.g. satisfaction surveys and other research methods listed in strategy and planning</li> <li>• Measuring costs</li> <li>• Evaluation</li> </ul>                                       |

When budgeting for the project, you need to consider the goals you set for the website, and the level of sponsorship and support you manage to obtain for the website project inside and outside your organization.

If the budget only covers a part of the goals, you should concentrate on the most important ones first, and drop other, secondary goals, or defer them to a later stage, when the benefits of having a website can be proven and you are in a better position to obtain more resources.

## 1.5 Communicate and Coordinate with Stakeholders and Manage Change

### Ø What It Is

Stakeholders include those who are affected by the website, whether negatively or positively, and those who can affect the outcomes of the website project.

When a website project is approved, it already signals that changes are required at various levels. Change management is a structured approach to transitioning individuals, teams and organizations from a current state to a desired future state. In project management, change management refers to a project management process where changes to a project are formally introduced and approved.

## Ø Why It's Important

In website planning, development, implementation and operations, the web team will not be working in isolation. The website will require the input of many stakeholders, from within your organization, and may require input from other government organizations, private companies, non-governmental organizations, international agencies and citizens.

While design and technical implementation normally requires the input of a relatively limited number of people, the production of relevant, up-to-date contents and provision of services usually depend on the involvement of staff from different offices and departments in your institution, and even from different government organizations, and this needs to be planned efficiently, and fit into people's workloads.

Service Level Agreements may be required to clarify the roles and responsibilities between the different organizations.

There are varied expectations and perceptions among stakeholders and managing expectations alone is a huge task. There are anxieties, resistance and hostilities that may be experienced from stakeholders along the way.

Websites do create more work, and it may require staff members and partners to share information but they are reluctant to do so. By making services available online, it involves changing the way government works, and some people will be resistance to these changes.

The change management process may be simple or complex depending on the magnitude or impact of change that the website will have on the organization, stakeholders and targeted audience. Strong project management and communication skills are needed to tackle the issues encountered in change management.

## Ø How to Implement

### a. Stakeholder analysis

The information needs of the various stakeholders should be analyzed to develop a methodical and logical view of their information needs and sources to meet those needs. The analysis

should consider methods and technologies suited to the project that will provide the information needed i.e. email, official letters. Care should be taken to avoid wasting resources on unnecessary information or inappropriate technology.

Key stakeholders on every project include:

- Project manager – the individual responsible for managing the project.
- Customer / Target audience – the individual or organization that will use the project's information and services.
- Performing organization – the enterprise whose employees are most directly involved in doing the work of the project.
- Project team members – the group that is performing the work of the project from business and technical units.
- Sponsor – the individual or group within or external to the performing organization that provides the financial resources for the project.
- In addition to these, there are many different names and categories of project stakeholders – internal and external, owners and funders, contractors, team members, government organizations, and society at large. The naming or grouping of stakeholders is primarily an aid to identifying which individuals and organizations view themselves as stakeholders. Stakeholder roles and responsibilities may overlap.

#### b. Develop communication plan

The main elements of the communication plan process include:

- Communications planning – determining the information and communication needs of the stakeholders that include:
  - o Stakeholder communications requirements
  - o Information to be communicated, including format, content and level of detail
  - o The people who will receive the information and who will produce it
  - o Suggested methods or technologies for conveying the information
  - o Frequency of communication

| Communication Planning Template |      |                                                                               |                      |                      |                            |                       |
|---------------------------------|------|-------------------------------------------------------------------------------|----------------------|----------------------|----------------------------|-----------------------|
| Stakeholder Group               | Role | Information to be communicated, including format, content and level of detail | Information producer | Information receiver | Frequency of communication | Communication methods |
|                                 |      |                                                                               |                      |                      |                            |                       |

- Information distribution – making needed information available to project stakeholders in a timely manner. The following is useful tips for information distribution:
  - o Do not bury crucial information
  - o Do not be afraid to report bad information
  - o Oral communication via meetings and informal talks helps bring important information—good and bad—out into the open
  - o Face to face communication is essential. Research says that in a face-to-face interaction
    - 58 per cent of communication is through body language
    - 35 per cent of communication is through how the words are said
    - 7 per cent of communication is through the content or words that are spoken
    - Pay attention to more than just the actual words someone is saying
    - A person's tone of voice and body language say a lot about how he or she really feels
- Performance reporting – collecting and disseminating performance information, including status reports, progress measurement and forecasting.
- Managing stakeholders – managing communications to satisfy the needs and expectations of project stakeholders and to resolve issues.

## 1.6 Plan Contracts for Outsourcing

### Ø What It Is

One common area where this business model thrives is in providing website creation, analysis and marketing services. All elements can be done remotely and delivered digitally, and service providers can leverage the scale and economy of outsourcing to deliver high-value services at reduced end-customer prices.

## Ø Why It's Important

As a public sector organization, it is important to weigh the pros and cons of outsourcing versus doing the work in-house, and if outsourcing is desirable, you will need to decide what part of the website development and management process you wish to outsource (see section a. Decide whether or not to outsource).

You will also need to consider who to outsource the services to. Business and technical requirements need to be developed so that potential contractors of the services or partners can submit their proposals for your consideration (see section b. Development of specifications and request for proposals).

Once the contractor or partner is selected, a contract needs to be developed between the parties to detail out the roles and responsibilities, the services to be delivered, the expected level of quality of services, and ways to measure this level of quality (see section c Establishment of service level agreements).

In summary, Outsourcing can bring some benefits:

- Outsourcing is more cost effective for short projects where the expenses of hiring, salary, training and equipment would be very high for an in-house team.
- An external agency brings a fresh perspective that institutionalized in-house teams cannot offer.
- External agencies have a broader perspective of the whole industry, rather than what is happening within a single organisation.
- An external agency needs to constantly ensure it is cutting-edge to stay competitive. This ensures that the quality of work is consistently high.
- Because external agencies tend to be larger than in house teams they have more specialized and highly skilled staff (e.g. in the areas of accessibility, usability, search engine optimization, etc.)
- Due to its competitive nature, they are more likely to keep up-to-date with the latest innovation and developments
- External agencies can bring a fresh perspective that can challenge internal preconceptions

## Ø How to Implement

### a. Decide Whether or Not to Outsource

Examine internal operations to see what functions should be turned over to an outside vendor by conducting the following:

- Review the list of tasks above and see if you have enough staff and the right skills set in house to carry out the work.

- Or you may have the skills set but you would like to utilize them for other larger priorities in your organization.
- Or there is an urgency to develop the website and the scheduled time to launch would over-stretch internal resources.
- Usually functions or processes to outsource are areas where the organization can cut or contain costs, gain increased skills or knowledge, find better reliability, improve service to citizens, or eliminate functions or resources that are hard to manage.
- Visit government organizations that are outsourcing to learn about their approach.
- Engage with the market to understand the solutions that may be available and get feedback on how the requirement may be best met.
- Consult with stakeholders about what is needed and the budget that is available to fulfil the need
- Compare the costs of outsourcing with the costs of performing the services in-house. The risks and benefits of moving forward with one alternative over another should also be included. The table below highlights some elements that can be compared:

| In-house Costs                                                                                                                                                                                                                                                                                                              | Outsourcing Costs                                                                                                                                                                                                                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Full-time employee</li> <li>• Software and equipment acquisition</li> <li>• Maintenance and modernization</li> <li>• Backup and recovery</li> <li>• Management time</li> <li>• Training</li> <li>• Recruitment</li> <li>• Turnover</li> <li>• Facility and supply costs</li> </ul> | <ul style="list-style-type: none"> <li>• Time for putting the outsourcing proposal together</li> <li>• Annual outsourcing fees (including anticipated future pricing adjustments if long-term)</li> <li>• Training of the external contractor on business processes of the organization</li> <li>• Project management time to manage the relationship between the contractor and the organization</li> </ul> |

- Conduct a feasibility study to see whether outsourcing for the selected functions or processes is right for the organization. The major consideration in developing a feasibility study is to:
  - o Show how outsourcing reduces costs
  - o Demonstrate how outsourcing adds value (e.g. fresh perspective, availability of specialized and highly skilled staff)
  - o Provide enough evidence to gain support and buy-in

If the organization does not have the necessary expertise, appoint advisers to help you in outsourcing decision.

If the decision is to outsource, the organization needs to consider with whom to outsource its services to. There are two paths to consider:

- A competitive process to select the most suitable vendor through procurement
- A partnership approach with other public organizations through a service level agreement

#### b. Development of Specifications and Request for Proposals

In the request for proposal (RFP), it is important to provide as much information as possible concerning the scope and expectation of the project. The better those bidders understand the environment, the less risk is assumed. Bidders generally build cost for risk into their proposals. Therefore, a thorough understanding by the bidder will ultimately reduce cost. Things to cover in the RFP include the following:

- Detailed Statement of Work that is required and description of IT system environment
- Output- or outcome-based specifications should be used. These focus on what the organization wants to achieve, not how a bidder is to provide it. This challenges bidders and gives them the scope to develop innovative solutions
- Specifying an accepted industry standard for a technical solution is good practice
- Bidders need to have a good understanding of the key constraints within which they will have to work

General principles for developing specifications in an RFP include the following:

- Fair competition – The specifications must be written so that more than one bidder can satisfy the requirement. This will increase competition and therefore achieve better value for money.
- Clear, easy to understand specifications – It is very important to develop adequate specifications, since it forms the basis of the bidding. Unclear, unnecessarily detailed and biased specifications will decrease the number of bidders participating in the tender and reduce overall quality. Unclear specifications will also confuse bidders, which may cause rejection of bids. This may require the rejection of all bids and rescheduling of the tender with consequent time delays.
- Units of measurement – Where possible, metric units must be used.
- Format – All specifications must be written in a bullet point format, starting with the most important characteristics of the item. Each bullet point should address only one characteristic. Each bullet point should be sequentially numbered starting from 1.
- Avoid unnecessary details – Only the key characteristics should be specified. Each characteristic listed should be required for evaluation. For example there is no need to specify the weight of an oscilloscope, although commonly given in manufacturers' specification sheets, since this is not a factor in deciding to purchase this item. "Bench standing" or "hand-held" would be sufficient.
- Using technical literature – It is usually not possible or in some cases risky to write specifications without using technical literature from manufacturers. Therefore, it is acceptable to use technical literature from manufacturers, but the following should be kept in mind: (1) Use literature only as a reference, (2) Do not include every specification listed in

the literature, (3) Do not be too specific with the specifications when referring to catalogues.

- Subjective statements – Do not use subjective statements such as “high quality”, “easy to use”, etc. The equipment specifications must be objective and actual. Such statements are open for interpretation and are impossible to evaluate. Be aware that “high grade” may simply indicate more features.
- Specifications should not be restrictive – The specifications should be definitive not restrictive. The objective of writing technical specifications is to explain to the bidders what is required.
- Model and manufacturer – If compatibility is an issue then the model and manufacturer can be specified. This is usually acceptable for IT software. For example it is acceptable to specify operating system or specific software if it has to operate with existing systems. But you cannot specify the manufacturer or a model for a computer.
- Accessories – All standard accessories and optional accessories required must be listed at the end of the specifications.

The bidders through their technical proposals should give evidence of:

- A proven track record of the skills required
- How they will meet the requirements stated in the statement of work
- How they will ensure quality and timeliness in their delivery
- How they will share knowledge and provide coaching, training and mentoring to relevant staff members

To evaluate the proposal, the details evaluation criteria must be clearly specified in the RFP. Normally the criteria and weightage will be divided into the both technical and financial proposals.

The technical proposals, an technical evaluation criteria needs to be developed by awarding marks to the criteria and weightage that depend on the requirements of each case, but the following can be used as a guide:

| Details                                                            | Maximum marks |
|--------------------------------------------------------------------|---------------|
| Experience of the vendor                                           | 20            |
| Methodology, work plan and understanding of the terms of reference | 30            |
| Suitability of the key personnel for the assignment                | 30            |
| Capability of transfer of knowledge or training                    | 20            |
| Total                                                              | 100           |

Sub-criteria can also be developed for each criteria. For example, the sub criteria for suitability of the key personnel for the assignment can be: (1) educational qualifications (20% weight), and (2) professional experience in the required area of assignment (80% weight).

Once you have selected a vendor, a contract between you and the vendor needs to be developed.

### c. Establishment of Service Level Agreements

In case that your organization is entering into a collaborative service arrangements where two or more public sector organizations collaborate jointly on a service or project initiative, the establishment of service level agreements (SLAs) is recommended.

The SLA document is like a contract. It formalize an agreement between two parties by setting out a minimum level of service. The key difference from a commercial contract is that an SLA is usually between public sector organizations or between different entities within one government organization.

The main reason organizations enter into SLAs is to improve the effectiveness and efficiency of service delivery. The drawing up of a detailed SLA achieves a number of objectives:

- It defines the terms and basis under which the services will be delivered.
- It states how the service performance levels will be measured.
- It specifies the services to be delivered.

The process of reaching an agreement is as important as the agreement itself. The best SLAs result from close cooperation between the two parties.

The first step in an SLA is to undertake a joint planning to define the service relationship. Things to consider in the joint planning exercise:

- Purpose of the SLA
- Duration of the agreement
- Details of all services, including how specific services are to be provided, resource requirements and schedule of activities
- Roles, responsibilities, and accountabilities of each party to the arrangement
- Service levels and performance expectations, for example, service availability (e.g. 24/7), responsiveness (e.g. helpdesk reply within 2 hour), reliability (e.g. the website is up and running 98% of the time)
- Availability restrictions, e.g. for maintenance and backup, or during weekends and public holidays
- Response time to service requests
- Service reporting requirements (e.g. monthly monitoring report)
- Billing and payment arrangements

- Penalties for poor performance, e.g. the use of service level credits that relates to the failure of the contractor to meet service levels that have been monitored and measured under the SLA, providing the "customer" a credit or rebate
- Notice period and processes for a party leaving the arrangement or for terminating the arrangement as a whole
- Risks associated with the proposed service relationship
- Procedures for periodic review of the agreement and amendment to the agreement

See an SLA template in Annex 7.

See section on “Part II - Hosting and Server Architecture” for details of developing an SLA with a hosting provider.

#### d. Funding Model and Contract Type

Three basic funding models, in various combinations and with some variation, cover most client/supplier and collaborative service arrangements:

##### Fee-based model

- In this model, budgets remain with your organization who pays for services based on actual usage.
- Requires detailed invoicing of services and can lead to disputes over volumes and actual services consumed versus the "quality" of those services.
- Requires that significantly more detail be built into an SLA and can be extremely complex to administer.
- Difficult to estimate the cost of these services for the year.
- More adaptable and scalable based on demand, and more cost transparent.

##### Pooled resources model

- In this model, the parties typically develop and agree on an annual scope of work for the service or project.
- The human resource requirements and costs of the annual plan are estimated and allocated usually based on their relative sizes or use of the service.
- Participants make financial, human resources, or in-kind contributions as agreed by the parties. The project office is responsible for managing within the established budget.
- Provides funding certainty for the year, is easy to administer, and clearly links contributions to an agreed-upon scope of work.
- Requires diligent participant monitoring of progress against budget and tends to be less flexible to emerging or urgent demands that fall outside of the annual planning cycle.

##### Appropriation-based model

- Public funds set aside for a specific purpose are allocated to the contractor on an annual basis.

- The contractor has stability of funding, but not a great deal of flexibility for adapting to changes according to your demands.
- You do not need to worry about the cost of these services, but you tend to have limited say in the scope or quality of the services delivered.

#### Mixed funding model

- Takes advantage of the best features of the three noted above. For example, you may decide to fund core functions through a fixed appropriation, while additional services/functions are fee-based.
- Service volumes can be negotiated within a maximum and minimum range. If you exceed the maximum you would have to pay an additional amount based on an agreed-to rate structure. If you do not reach the minimum, there could be an option to receive a refund or to carry over the unused portion for the next year.

## 1.7 Domain Name Registration

### Ø What It Is

Domain name registration refers to the process of registering a domain name, which identifies one or more IP addresses with a name that is easier to remember and use in URLs to identify particular web pages.

### Ø Why It's Important

The goal of domain names is to provide a mechanism for naming resources in such a way that the names are usable in different hosts, networks, protocol families, Internets and administrative organizations.

### Ø How to Implement

- Public sector organization domain name should be registered under the .gov.iq top-level domain.
- Domain name needs to be registered with the Communications and Media Commission (<http://www.cmc.iq>).
- For multilingual website, there is no need to create special URLs. Nonetheless, your users might like to identify what section of your website they are on just by glancing at the URL. You can create sub-directories or sub-domains for the different language sites. For example, the following URLs let users know that they are on the Arabic section of this site:  
<http://www.moh.gov.iq>  
<http://www.moh.gov.iq/ar>

While these other URLs let users know that they are viewing the same page in English:  
<http://www.moh.gov.iq/en>

Similarly for Kurdish it can be:  
<http://www.moh.gov.iq/krq>

If you want to create URLs with non-English characters, make sure to use UTF-8 encoding.

## 1.8 Consider Legal Issues

### Ø What It Is

There are a variety of legal issues that may relate to your website, and organizations are encouraged to consult their legal teams when developing statements and terms on these legal issues:

- Copyright
- Privacy
- Accessibility
- Terms of Use
- Disclaimer

### Ø Why It's Important

A variety of legal issues can arise in developing and operating a website. A website can expose organization to potential liabilities and violation of national legislations and international laws.

### Ø How to Implement

#### a. Copyright

A copyright notice on a website sets out what you can and cannot do with the material on that website. You may wish to add a suitable copyright notice to your organization's website.

The *Public Data Policy: Directive from Prime Minister's Office* promotes the:

Publication of non-restricted and non-sensitive government data in open standards and under open licenses, that is to allow public use, re-use, and re-distribution of the data concerned for any legal purpose.

Many government organizations are using the Creative Commons open license when releasing public sector information. Public sector information includes all materials that agencies are generally obliged to publish or otherwise allow free public access to.

Copyright was created long before the Internet and the “all rights reserved” is restricting for sharing and collaboration. Creative Commons is a non-profit organization offering creative commons licenses that enable you to modify your copyright terms to best suit your needs. It gives people the right to share, use and even build upon a work your organization has created without having to seek your permission, but of course acknowledging the source in the way you want them to do so.

The Creative Commons recommends that public sector organizations use the Creative Commons Attribution (BY) or the Attribution-ShareAlike (BY-SA) licenses.

- Attribution (CC BY): This license lets others distribute, remix, tweak and build upon your work, even commercially, as long as they credit you for the original creation. This is the most accommodating of licenses offered. Recommended for maximum dissemination and use of licensed materials.
- Attribution-ShareAlike (CC BY-SA): This license lets others remix, tweak and build upon your work even for commercial purposes, as long as they credit you and license their new creations under the identical terms.

To see what Creative Commons licenses public sector organizations from different countries are using, see [http://wiki.creativecommons.org/Government\\_use\\_of\\_Creative\\_Commons](http://wiki.creativecommons.org/Government_use_of_Creative_Commons).

To select the Creative Commons license that suits your organization, you can use the Creative Commons tool at <http://creativecommons.org/choose/>.

Suggested text for copyright notice:

*With the exception of the [Agency's logo], any material protected by a trade mark, [third party copyright material] and where otherwise noted, all material presented on this website is provided under a Creative Commons XXXXX license.*

*The details of the relevant license conditions are available on the Creative Commons website (accessible using the links provided).*

*Content from this website should be attributed as XXXXX*

## b. Privacy

The Public Data Policy: Directive from Prime Minister's Office mandates:

Protection of civil and political rights as per international human rights treaties signed by Iraq including privacy and third-party intellectual property rights.

The purpose of a privacy statement on a website is to inform or reassure your website users that the information they provide to you in website forms etc. is going to be used appropriately.

The privacy statement states what information is collected, for what purpose and how this information is used, if it is disclosed and to whom, and addresses any other relevant privacy issues.

Depending on the nature of the website, the privacy statement may need to deal with some or all of the following:

- The scope of the statement, e.g. *This privacy notice applies to personal information collected on [the organization's] website*"
- The circumstances in which personal information is collected, by whom it is held (e.g. the responsible organization and/or third parties) and any choices users have as to whether such information is collected in the first place
- How the collected personal information will be used by the collecting organization and the circumstances in which it may be disclosed
- The collection and use of statistical information, including users' IP addresses
- A statement that cookies are used, if that is the case, and a brief description of their purpose
- If personal information is collected via the organization website this should be done by sufficiently secure means. The privacy statement should address security issues where appropriate. Individuals should be provided with alternative means of providing personal information to the agency, other than via the website
- Users' rights to request access to or to correct personal information held by the collecting organization. Contact details for such purposes

#### c. Accessibility

The World Wide Web Consortium provides a set of guidelines (Web Content Accessibility Guidelines WCAG 2.0) for making website content accessible for people with disabilities. This is widely regarded as the international standard for web accessibility and is recommended in the *Government Interoperability Framework and National Enterprise Architecture of the Government of Iraq*.

In the accessibility statement indicate that the website is following the recommendations of the WCAG 2.0 and describe some of the accessibility features on the website, e.g. adjustment of font size, compatibility with assistive technologies like screen readers, functionalities available

on keyboard, etc. (See *Part 2: Development* for guidelines on how to make your website accessible.)

#### d. Terms of Use

Organizations are encouraged to provide terms of use on interactive websites and those that require authenticated access.

An interactive website is one that enables users to contribute content that may be published on the website. Users may be allowed to submit complaints and feedback online, comment on webpages, participate in online discussions, etc.

Depending on the nature of the website, terms of use may need to deal with some or all of the following:

- Warranties that site users contributing third party copyright content have the right to use such material
- Ownership or licensing of users' contributions, e.g. *Other than personal information not visible on the website, which is covered under the Privacy Statement, any material you transmit or post to the website will be considered non-confidential. We do not claim to own your copyright material. You do, however, grant the [Organization name] a non-exclusive, royalty-free and irrevocable license to publish such material in any media and in any format, including on this or any other website, in hard copy publications, in e-mail notifications and alerts and in web feeds.*
- Unacceptable use and the website owner's right to remove offending material, e.g. *You are prohibited from posting or transmitting to or from the website any material that is illegal, obscene, defamatory, threatening, infringing of intellectual property rights, invasive of privacy or otherwise injurious or objectionable.*
- Moderation of user-generated content: Will the content be moderated before it is published (pre-moderation) or after it is published (post-moderation)? Indicate the right remove contributions or modify them if they are considered to be inappropriate or irrelevant to the subject-matter of the website. The reasons for moderation may be added, e.g.

*To ensure that none of the below activities are performed:*

- *Use of vulgar, offensive or obscene terms and language*
- *Malicious posts jeopardizing other users or website*
- *Spam and automated messages and advertisements*
- *Post containing references to illegal activities or libelous remarks*
- *Impersonation of a person or an organization*
- *Incitement of hatred about a specific group*

*The moderator reserves the right to suspend comments at any time.*

- Banning of abusive commenters, e.g. *We reserve the right to suspend or terminate a user's access or ability to post to comments, forum or other discussion areas if we believe any such facility is being abused.*
- Cooperation with authorities in the event that material breaching other parties' rights, or that is otherwise unlawful, is posted to the site.

#### e. Disclaimer

While organizations should strive to ensure that content on their sites is accurate and up to date, it is inevitable that there will be occasions where some content may be inaccurate or out-of-date, or where third party content over which the organizations has little or no control will appear on its website.

Example of a disclaimer:

*The information and electronic services provided on [website address] are to provide an alternative channel for obtaining information and services from the Government of Iraq. The [organization name] accepts no responsibility in relation to the accuracy, completeness, currency, usefulness or otherwise, of the contents provided by external sources.*

*Users are advised to verify/check any information with the relevant government organizations and/or other source(s), and to obtain any appropriate professional advice before acting on the information provided on [website address].*

*The [organization name] will not have or accept any liability, obligation or responsibility whatsoever for any loss, destruction or damage however arising from or in respect of any use or misuse of or reliance on the information and electronic services delivered on [website address].*

#### Linking to statements and terms

A link to the following statements and terms should be available from the footer of all web pages:

- Copyright Information
- Accessibility Statement
- Privacy Statement
- Terms of Use
- Disclaimer

### 1.9 Develop Key Performance Indicators

#### Ø What It Is

The previous sections focused on planning the pathway to achieve your website goals/objectives. Before beginning to develop your website, you need to establish ways to measure progress and the extent to which your goals/objectives are being achieved by formulating key performance indicators (KPIs). KPIs measure performance by showing trends to demonstrate that improvements are being made over time.

This section provides guidelines on how to develop KPIs (what to measure), and *Part 5: Continuous Improvement* focuses on the tools to measure progress.

### Ø Why It's Important

KPIs are needed to measure if the website is meeting business requirements and target audience needs and is of high quality according to international best practices.

Performance measurement contributes to the continuous improvement of website quality by making decision makers aware of the level of performance of the website, which in turn creates an incentive to improve performance. When the same KPIs are applied across different websites, their performance can be compared, and this also drives improvement.

### Ø How to Implement

- Step 1: Revisit your website goals.
- Step 2: Establish quantifiable targets your organizations need to reach its goals. KPIs are often expressed in numbers (e.g. no. of visitors, no. of complaints), percentages (e.g. 98% availability) and rate of change (e.g. 10% increase in customer satisfaction).
- Step 3: Identify the data source for the KPIs (how will you obtain the data)
- Step 4: Identify who will be responsible for collecting data for the KPIs and how often.
- Generally you can divide what you measure into three categories:
  1. Delivery of website objectives: At the start of the planning stage, website objectives were developed that align with the mandate of the organization. A website is a tool to achieve your organization objectives and the website should work to help your organization have the desired impact in the lives of Iraqis.
  2. User's behaviour and satisfaction: You want to know the extent to which your website meet target audiences' needs. Here you need to measure the extent to which users can complete tasks on your website, and the extent to which they are satisfied with their experience on the website.

3. Website quality: This is related to the quality on any good websites, such as its findability through search engines like Google, usability and accessibility. Website availability and responsive, editorial quality, and compliance with web standards can be measured.

Setting a realistic target value for a KPI could prove difficult to start with, especially if the current levels of performance are unknown. You should therefore first define the KPI, start measuring it for a period of time, if possible study the past performance, identify improvement opportunities in this area, and then consider setting targets. This way you will define more realistic and achievable targets.

Examples of KPIs and the template to plan performance monitoring are provided in the table below:

| Goal                                     | KPI                                                 | Target | Data Source                                                                                    | Who will collect / when                               |
|------------------------------------------|-----------------------------------------------------|--------|------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <i>Delivery of website objectives</i>    |                                                     |        |                                                                                                |                                                       |
| Efficiency                               | Reduced call centre enquiries                       | 10%    | Call centre records<br><br>Web logs or web analytics – no. of unique visitors on website, etc. | Call Centre Manager and Web Project Manager (Monthly) |
| Effectiveness                            | Increased use of online services                    | 10%    | Web logs or web analytics – no. of unique visitors to service page                             | Web Project Manager (Monthly)                         |
| <i>Users' behaviour and satisfaction</i> |                                                     |        |                                                                                                |                                                       |
| Usability                                | % of users able to complete tasks                   | 50%    | Usability Test                                                                                 | Web Project Manager (Six-monthly)                     |
| Satisfaction                             | % of users are satisfied with website               | 80%    | Online survey                                                                                  | Web Project Manager (Annually)                        |
| <i>Website quality</i>                   |                                                     |        |                                                                                                |                                                       |
| Accessibility                            | % of pages comply with W3C accessibility guidelines | 80%    | Accessibility test                                                                             | Web Developer (Annually)                              |
| Findability                              | % of visits referred by search engine               | 60%    | Web logs or web analytics – Traffic source                                                     | Web Project Manager (Monthly)                         |

|                   |                                           |     |                                                       |                               |
|-------------------|-------------------------------------------|-----|-------------------------------------------------------|-------------------------------|
| Editorial Quality | % of pages reviewed in the past 6 months  | 85% | Content Management System                             | Web Editor (Six monthly)      |
| Availability      | % of time the website is functioning well | 98% | Web server performance, Reports from hosting provider | Technical Architect (Monthly) |

- Add one indicator at a time and build the ability to collect data. Do not collect data that you cannot turn into an improvement.
- Formal review of the website should be undertaken at least annually and may involve a usability test and /or a user satisfaction survey. More informal reviews should be conducted monthly or as required such as the review of web logs or web analytics, focusing on identifying patterns of usage and behaviour, and comparing statistics from one reporting period to the next, e.g. year to year, month to month.

## IV- Part 2: Development

In the planning stage you have decided on:

- Web Governance Strategic Planning and Purpose
- Who your target audiences are, including their needs
- How you will measure progress towards achieving your website goals.

You have a web team in place with clear roles and responsibilities, and also other staff members, and individuals or agencies outside your organization that have agreed to participate in the website development process.

You have started thinking about the content that needs to go into the website, where you can find this content and how it will be developed.

You have also consulted your legal team to understand all the legal issues that need to be considered and addressed prior to the launch of your website.

Now it's time to put all this together at the website development stage.

This part covers the following:

1. Content Organization and Categorization
2. Managing the Content
3. Content Management System Recommendations and Specifications
4. Web Design and Building
5. Content Development
6. Writing Process
6. Hosting and Server Architecture
7. Security Guidelines

## 2.1 Content Organization and Categorization

### Ø What It Is

Content organization and categorization looks at how content can be grouped, labeled and placed on the website in such a way that it will be easier to manage, find and use. The way your content is organized and categorized should be based on target audience's expectations so that they can make successful predictions about where to find the needed information and services on the website.

### Ø Why It's Important

When content is organized and categorized well, it allows users to navigate and find the information and services that are needed in the shortest time possible.

### Ø How to Implement

The key actions required for content organization and categorization include the following:

- a. Minimum content requirements for Iraqi public websites
- b. Organizing content based on audience need
- c. Designing taxonomies
- d. Labeling Content
- e. Designing navigation system
- f. Information diagramming and determining the Layout of the Contents
- g. Determining the Layout of the Contents - Wireframes

#### a. Minimum Content Requirements for Iraqi Public Web Sites

Note the minimum content required public sector websites as per the Iraqi endorsed Government Interoperability Framework and National Enterprise Architecture (GIF/NEA) standard document.

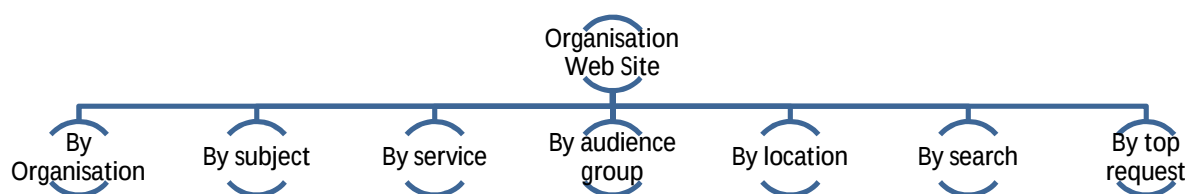
- Organisational Detail: Structure of organization. List of all officials with designations and contact information.
- Policy: Electronic copies of all relevant laws and ministerial orders relevant to the functioning of that particular government entity.
- Services: List of services offered to citizens and to businesses. Details of the procedures to be followed in order to access these services along with soft copies of all relevant forms.
- Projects: RFP/Invitations for Bids/Project Status/Contracts Awarded.
- Metadata: For all content items on the website the following metadata shall be exposed via the web-interface – Author, Date of Publication and Date of Expiry.
- News and Events: Archive of all relevant news and a calendar of events.

- Feedback: A transactional system to handle complaints, enquires and feedback from citizens and businesses. This is described in greater details in the NEA section of this document.
- Jobs: List of all current and past vacancies in the government entity with details on required qualification and the recruitment process.

#### b. Organizing Content based on Audience Need

The best practice for organizing and categorizing website layout is organizing content based on your audience's needs. Your primary form of navigation should be one of the following:

- By organisation
- By subject (topics, life events): organize content based on the specific subject matter - e.g. birth, death, employment, marriage, retirement, primary education, secondary education, high education, child health, adult health, etc
- By task or service: organize content by considering the needs, actions, questions, or processes that users bring to that specific content – e.g. pay electricity and water bill, apply for driver's license, apply for visa, file a complaint, check exam results
- By audience group: organize content for separate segments of users. Audience schemes can be closed or open, meaning that users are able to navigate from one audience to another. This type of scheme does present challenges unless the content lends itself to users very easily self-identifying to which audience they belong and perhaps not fitting multiple audience profiles – e.g. citizen, business, government, contractor, student, job seekers, person with disabilities, tourist, etc
- By geographic location: Geographical schemes can be used for any content with some sort of geography as a key attribute- central, local governments, qada', nahieh.
- By search
- By top request
- By any combination of these factors



Because navigation by organization has traditionally been less effective for web users, you should use this as an alternative— not primary—form of navigation.

During the planning stage, a content inventory was developed. Experiment with how your content fit in the different type of categories presented below.

### c. Designing Taxonomies

Taxonomy is a controlled list of terms with one or more terms being applied to each piece of content. More specifically, the taxonomy is a list of terms that you can use to consistently “tag” your content making it easier to find your content.

For example, the taxonomy for the Ministry of Education content organization may include taxonomy of terms as follows:

- By Organisation

- o Mission
- o Legal status
- o Structure
  - § Ministry Office
  - § Planning
  - § Education Unit
  - § Exam Unit

- By Audience:

- o Education Providers (schools)
- o Students
- o Teachers
- o Parents
  - § Find School
  - § Enroll in School
  - § Complaint about School

- By service

- o Find School
  - o Pre-Scholl
  - o Primary School
  - o Secondary School
    - Math Curriculum
    - English Curriculum
    - Science Curriculum
- o Enroll in School
- o Compliant about School

- By subject

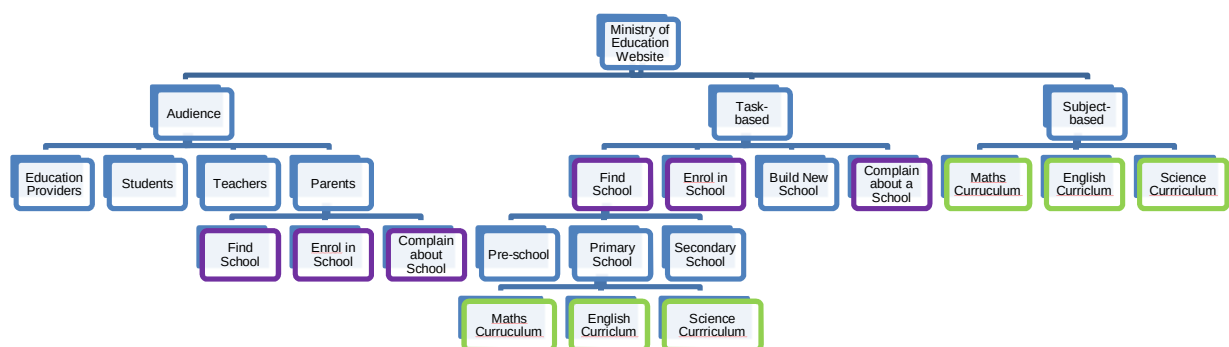
- o Math Curriculum

- o English Curriculum
- o Science Curriculum

As you can see, your taxonomy should be organized in a hierarchy using the form of navigation listed in section a. It is important to consider the balance between breadth and depth in your taxonomy. Breadth refers to the number of options at each level of the hierarchy. Depth refers to the number of levels in the hierarchy. If a hierarchy is too narrow and deep, users will have to click through many levels to find what they are looking for.

The taxonomy should also be easily understood by target audience of website to help them find the information that they need easily. For example, if the site is targeted at doctors, medical terms such as cardiovascular and respiratory diseases are appropriate. However, if the site is targeted at patients or families of patients, it may be more appropriate to use layperson terms such as heart and lung diseases.

The taxonomy should allow cross-listing so that website users can find content in multiple ways. The interactions in the navigation taxonomy can be represented in a diagram. A sample diagram below shows the different categories and their hierarchies. As you can see some of the categories can be grouped and structured in multiple ways (see the purple and green boxes).



Creating taxonomy and tagging your content will also help users find your content through commercial search engines like Google and Bing, and once users are on your website, through internal search.

#### d. Labeling Content

Each of these categories/taxonomies needs to be labeled with suitable terms that target audience can relate to.

To see how your target audiences organize, categorize and label different types of content on your website, you can do a card sorting exercise. Card sorting is a quick, inexpensive and reliable method for finding patterns in how users would expect to find information or services. Card sorting generates an overall structure for the web content, as well as suggestions for navigation and menus. Results from card sorting should be considered when developing the sitemap.

Step 1: Create your cards. Using the content inventory you created in the planning stage, place one component per card. The component may be a programme, service, information, policy or document. Create about 50 to 100 cards.

Other sources for creating your cards include:

- Existing documents and manuals
- Existing online content
- Planned applications and processes
- Potential future content

Step 2: Duplicate this set of cards for target audiences to sort.

Step 3: Invite about 10 different target audiences to a card sorting exercise. The participants at the card sorting session must be the actual end-users of the website. For 50 cards, allocate one hour for the card sorting exercise (15 minutes to introduce the exercise, 30 minutes to sort the cards, and 15 minutes to wrap up). For 100 cards, allocate about 2 hours.

Step 4: Ask participants to begin by sorting the cards into groups. Once the cards are grouped, they need to give names to the different groups. Blank cards will be provided so that participants can add topics. Preferably, coloured cards are provided for writing the names of the different groups.

Step 5: Analyse the card sorting exercise and look for patterns in how target audiences sort the information and services.

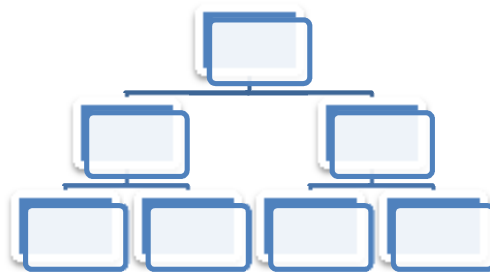
- Do the users want to see the information grouped by subject, task, audience, content type and/or geographic location?
- How similar are the needs of the different user groups?
- How different are their needs?
- How many potential main categories are there?
- What should those groups be called?

e. Designing Navigation System

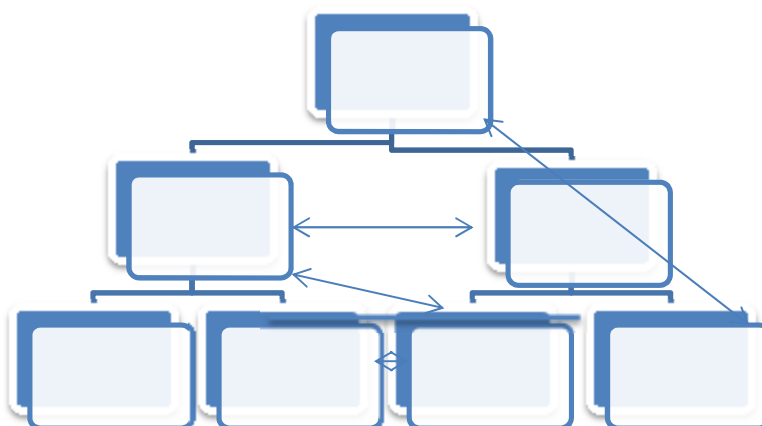
At this stage, you need to finalize your navigation design. A complex web site often includes several types of navigation systems. To design a successful site, it is essential to understand the types of systems and how they work together to provide flexibility and context.

- Hierarchical Navigation

Hierarchy is a familiar and powerful way of organizing information. In many cases, it makes sense for a hierarchy to form the foundation for organizing content in a web site. However, hierarchies can be limiting from a navigation perspective. In hierarchy, you were forced to move up and down the tree structures of content hierarchies see figure below. It was impractical to encourage or even allow jumps across branches (lateral navigation) or between multiple levels (vertical navigation) of a hierarchy.



The Web's hypertextual capabilities removed these limitations, allowing tremendous freedom of navigation. Hypertext supports both lateral and vertical navigation. From any branch of the hierarchy, it is possible and often desirable to allow users to move laterally into other branches, to move vertically from one level to a higher level in that same branch, or to move all the way back to the main page of the web site. If the system is so enabled, users can get to anywhere from anywhere. However, as you can see in Figure below, things can get confusing pretty quickly.

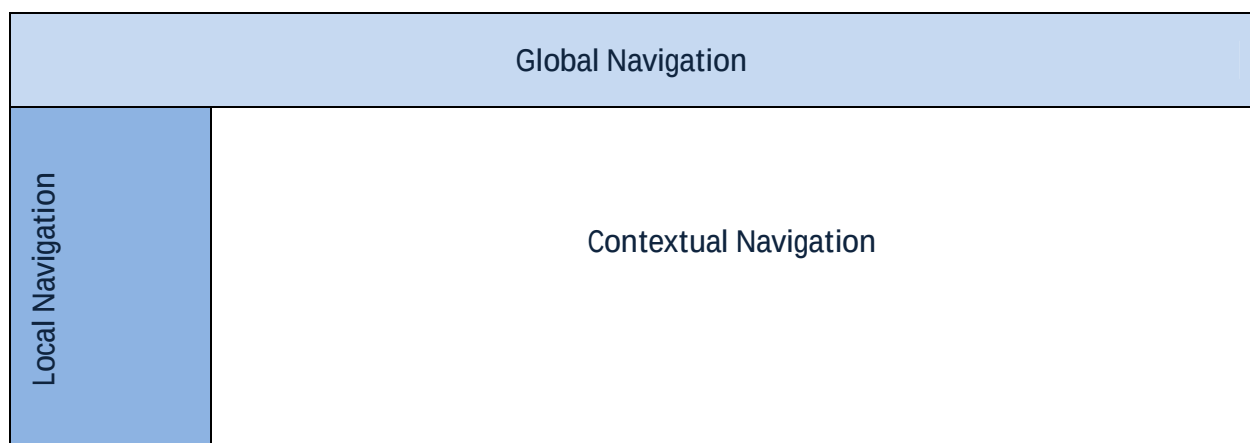


The trick to designing navigation systems is to balance the advantages of flexibility with the dangers of clutter. In a large, complex web site, a complete lack of lateral and vertical navigation aids can be very limiting. On the other hand, too many navigation aids can bury the hierarchy and overwhelm the user. Navigation systems should be designed with care to complement and reinforce the hierarchy by providing added context and flexibility.

- Embedded Navigation

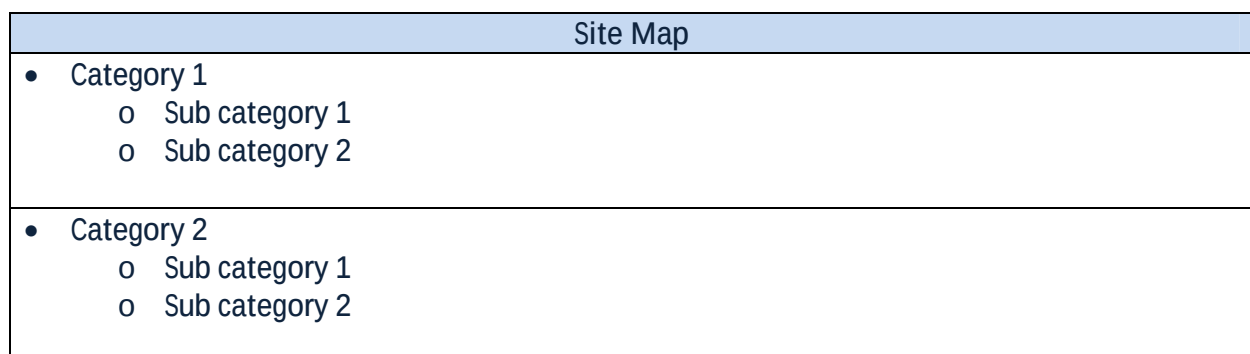
Most large web sites include all three of the major embedded navigation systems we saw in Figure below.

The embedded navigation system use integrated Global, local, and contextual navigation systems that are extremely common on the Web. Each system solves specific problems and presents unique challenges.



Embedded Navigation System (Global, Local and Contextual)

Second, we have supplemental navigation systems such as sitemaps, indexes, and guides that exist outside the content-bearing pages as the figure below.



Supplemental navigation systems

To design a successful site, it is essential to understand the nature of these systems and how they work together to provide context and flexibility.

- Global (Site-Wide) Navigation

By definition, a global navigation system is intended to be present on every page throughout a site. It is often implemented in the form of a navigation bar at the top of each page. These site-wide navigation systems allow direct access to key areas and functions, no matter where the user travels in the site's hierarchy.

Because global navigation bars are often the single consistent navigation element in the site, they have a huge impact on usability. Consequently, they should be subjected to intensive, iterative user-centered design and testing.

The global navigation can also called top horizontal bar navigation as in figure below:

|        |        |        |        |        |             |
|--------|--------|--------|--------|--------|-------------|
| Menu 1 | Menu 2 | Menu 2 | Menu 3 | Menu 4 | Menu 5 .... |
|--------|--------|--------|--------|--------|-------------|

It's often not possible to identify the global navigation system from the main page of a web site. The main page is sometimes the sole exception to the omnipresence of the global navigation bar. In some cases, designers choose to show an expanded view of the global navigation system on the main page. In other cases, the main page presents a variety of navigation options, and it's impossible to tell which ones have been carried throughout the site without exploring further.

- Local Navigation

In many web sites, the global navigation system is complemented by one or more local navigation systems that enable users to explore the immediate area. Some tightly controlled sites integrate global and local navigation into a consistent, unified system.

The local navigation can also called top horizontal bar navigation as in figure below:

|              |
|--------------|
| Menu 1       |
| Sub Menu 1.1 |
| Sub Menu 1.2 |
| Sub Menu 1.3 |
|              |
|              |

- Contextual Navigation

Some relationships don't fit neatly into the structured categories of global and local navigation. This demands the creation of contextual navigation links specific to a particular page, document, or object.

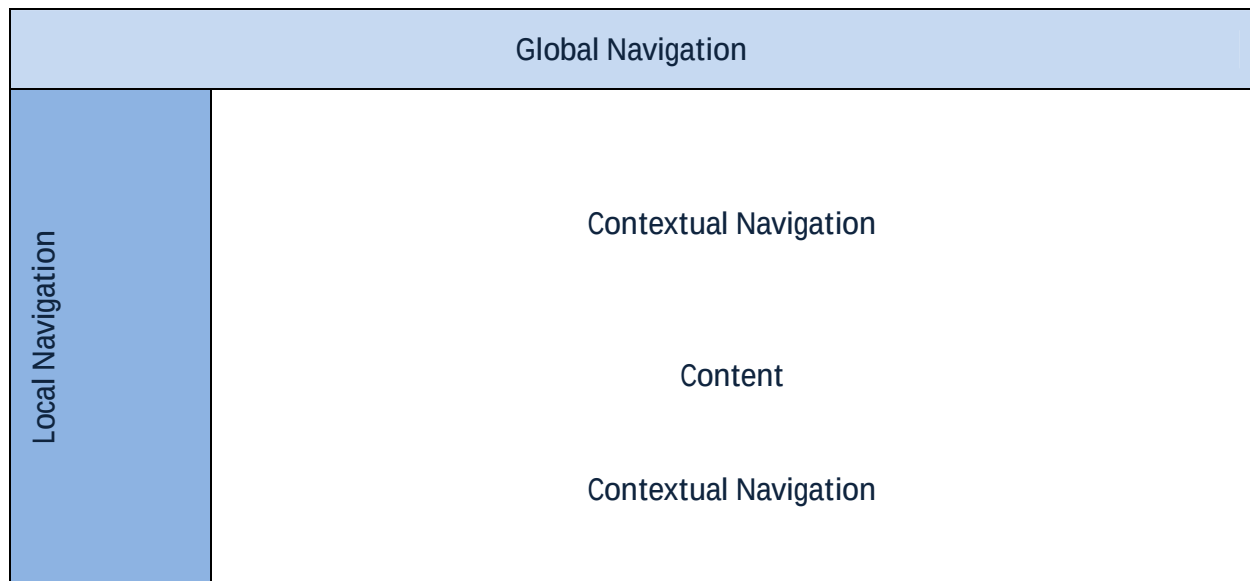
The actual definition of these links is often more editorial than architectural. Typically an author or editor will determine appropriate links once the content is placed into the architectural framework of the web site. In practice, this usually involves representing words or phrases within sentences or paragraphs as embedded or "inline" hypertext links.

This approach can be problematic if these contextual links are critical to the content, since usability testing shows that users often tend to scan pages so quickly they miss or ignore these less conspicuous links. For this reason, you may want to design a system that provides a specific area of the page or a visual convention for contextual links.

- Implementing Embedded Navigation

The constant challenge in navigation system design is to balance the flexibility of movement with the danger of overwhelming the user with too many options. One key to success is simply recognizing that global, local, and contextual navigation elements exist together on most pages and integrated effectively to complement one another.

But when designed independently, the three systems can combine to monopolize a great deal of screen real estate. Alone, they may each be manageable, but together on one page; the variety of options may overwhelm the user and drown out the content.



Navigation can draw out the content

In some cases, you may need to revisit the number of options within each navigation bar. In others, the problem may be minimized through careful design and layout. In its simplest form, a navigation bar is a distinct collection of hypertext links that connect a series of pages, enabling movement among them.

They can support global, local, and contextual navigation. You can implement navigation in all sorts of ways, using text or graphics, pull-downs, pop-ups, rollovers, cascading menus, and so on. Many of these implementation decisions fall primarily within the realms of interaction design and technical performance rather than information architecture, but let's trespass briefly and hit a few highlights.

For example, is it better to create textual or graphical navigation bars? Well, graphic navigation bars tend to look nicer, but can slow down the page-loading speed and are more expensive to design and maintain. If you use graphic navigation bars, you need to be sensitive to the needs of users with low bandwidth connections and text only browsers. People who are blind and people using wireless mobile devices are two important audiences to consider. Appropriate use of the <ALT> attributes to define replacement text for the image will ensure that your site supports navigation for these users.

And where do the navigation bars belong on the page? It has become convention to place the global navigation bar along the top of the page and the local navigation bar along the left-hand side. However, all sorts of permutations can be successful. Just make sure you do lots of user testing, particularly if you deviate from convention.

What about textual labels versus icons? Textual labels are the easiest to create and most clearly indicate the contents of each option. Icons, on the other hand, are relatively difficult to create and are often ambiguous. It's difficult to represent abstract concepts through images. A picture

may say a thousand words, but often they're the wrong words—particularly when you're communicating to a global audience. Icons can successfully be used to complement the textual labels, however. Since repeat users may become so familiar with the icons that they no longer need to read the textual labels, icons can be useful in facilitating rapid menu selection.

How about the increasingly common use of DHTML and JavaScript rollovers to show the navigation options behind a category or menu option? Well, it depends. On one hand, this prospective view on steroids can make valuable use of limited screen real estate, enhancing the scent of information and often reducing the number of pages and clicks, while simultaneously adding a dynamic, interactive feel to the web site. On the other hand, rollover navigation can be difficult to do well. Usability and accessibility often suffer due to poor design and implementation. Also, the use of rollover navigation is no substitute for the careful selection of the omnipresent major categories and labels, which lend themselves to rapid visual scanning. You can't expect the user to "mine sweep" her mouse cursor over every option.

And finally, what about frames? In the 1990s, designers went a little crazy with frames, implementing navigation bars and banner advertisements alike inside nonscrollable panes. We don't see too many frames these days, and that's a very good thing. Even beyond the technical design and performance problems, frames tend to cripple usability. After all, the Web is built upon a model of pages, each of which has a unique address or URL. Users are familiar with the concept of pages. Frames confuse this issue by slicing up pages into independent panes of content. By disrupting the page model, the use of frames frequently disables important browser navigation features such as bookmarking, visited and unvisited link discrimination, and history lists. Frames can also confuse users who are trying to perform simple tasks such as using the Back button, reloading a page, and printing a page. While web browsers have improved in their ability to handle frames, they can't remove the confusion caused by violating the page paradigm.

- Supplemental Navigation

Supplemental navigation systems include sitemaps, indexes, and guides. These are external to the basic hierarchy of a web site and provide complementary ways of finding content and completing tasks. Search also belongs to the supplemental navigation family.

Supplemental navigation systems can be critical factors for ensuring usability and findability within large web sites.

- Courtesy Navigation

Provides access to items that users don't need on a regular basis, but that are commonly provided as a convenience. i.e links to contact information, feedback forms, and policy statements are commonly found in courtesy navigation.

## f. Information Diagramming and Determining the Layout of the Contents

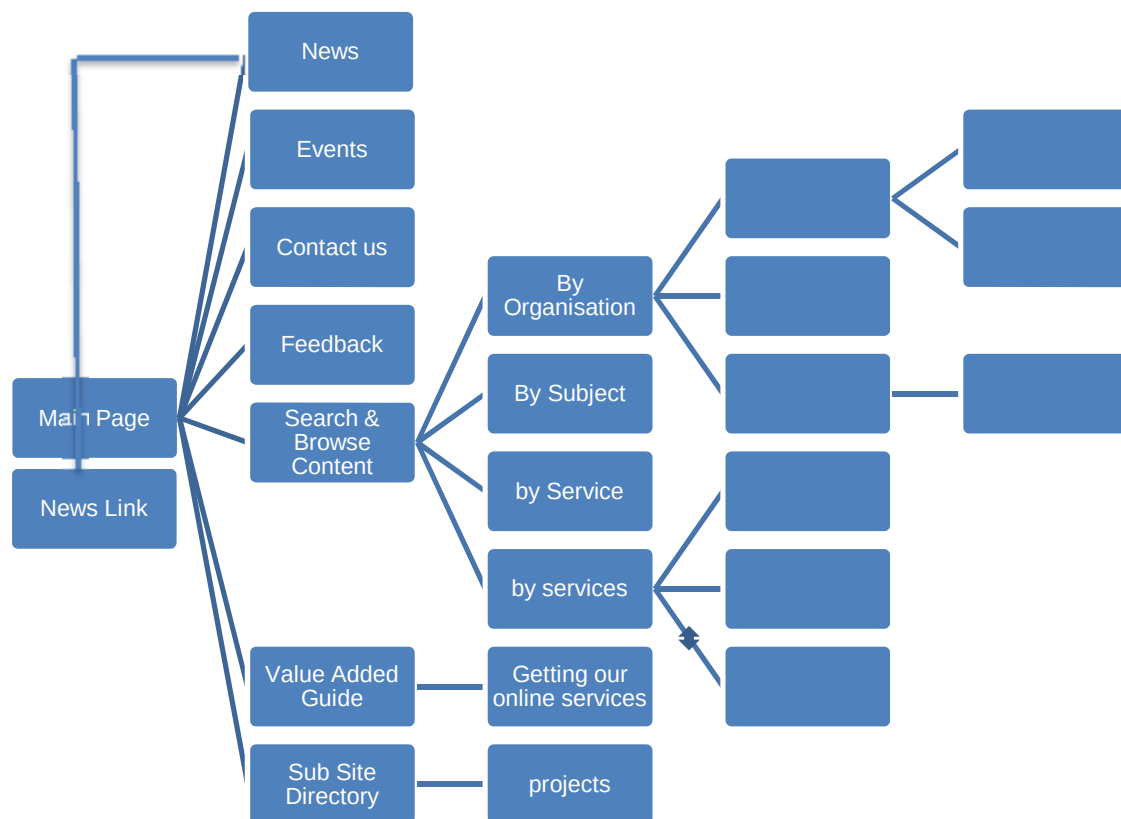
Information Diagrams are useful for communicating the two basic aspects of content/information system's structural elements to navigation systems (visualization). Diagrams define:

- Content components: What constitutes a unit of content, and how those components should be grouped and sequenced
  - Connections between content components: How components are linked to enable navigating between them
- 
- High-Level Information Architecture Blueprints/Site Map

Blueprint or Site Map shows the relationships between pages and other content components, and can be used to portray organization, navigation, and labeling systems. They are often referred to as “site maps or blueprint” and do in fact have much in common with the other definition of “site map,” a type of supplementary navigation system that we describe previously. Both the diagram and the navigation system display the “shape” of the information space in overview, functioning as a condensed map for site developers and users respectively.

High-level sitemap are often created by information architects as part of a topdown information architecture process. Starting with the main page, the information architect might use the process of developing a blueprint to iteratively flesh out more and more of the architecture, adding subsidiary pages, increasing levels of detail, and working out the navigation from the top down.

These sitemap can be drawn by hand, but we prefer to use diagramming software such as Visio or OmniGraffle. These tools not only help you to quickly layout your architecture sitemap, but can also help with site implementation and administration. They also lend your work a more professional look, which, sadly, will be more important at times than the quality your actual design.



Once you have finalized your sitemap, you need to show how the different contents link up on your website. A good practice is to create wireframes and prototypes of your website.

#### g. Determining the Layout of the Contents - Wireframes

Sitemaps can help an information architect determine where content should go and how it should be navigated within the context of a site, subsite, or collection of content.

A wireframe helps to convey the structural design of a website. It demonstrates the placement of key elements of the page and provides a means to explore a website's potential layout including where functional, content and navigational features will be positioned.

Wireframes serve a different role: they depict how an individual page or template should look from an architectural perspective. Wireframes stand at the intersection of the site's information architecture and its visual and information design.

While it is not necessary to develop a wireframe for every page of a website, wireframes should be developed to demonstrate each unique page layout, for example the home page, a level 1 category page, a level 2 category page, a content page, a search result page and the help page.

For example, the wireframe forces the architect to consider such issues as where the navigation systems might be located on a page. And now that we see it on an early version of a page, does it seem that there are actually too many ways to navigate?

Trying out ideas in the context of a wireframe might force you back to the sitemap's drawing board, but it's better to make such changes on paper rather than reengineering the entire site at some point in the future.

Wireframes describe the content and information architecture to be included on the relatively confined two-dimensional spaces known as pages; therefore, wireframes themselves must be constrained in size.

These constraints force the information architect to make choices about what components of the architecture should be visible and accessible to users; after all, if the architectural components absorb too much screen real estate, no room will be left for actual content!

Developing wireframes also helps the information architect decide how to group content components, how to order them, and which groups of components have priority.

In Figure below provide example of wireframes. Wireframes can be pencil drawings or sketches on a whiteboard, or they can be produced using a wide range of free or commercial software applications.

The wireframe usually lacks typographic style, colour or graphics, since the main focus lies in functionality, behaviour and priority of content. In other words, it focuses on what a screen does, not what it looks like.

While it is not necessary to develop a wireframe for every page of a website, wireframes should be developed to demonstrate each unique page layout.

|                  |                                    |                                                 |
|------------------|------------------------------------|-------------------------------------------------|
| Logo             |                                    | Courtesy Navigation<br>Contact Us, Feedback, .. |
|                  | Global Navigation                  |                                                 |
|                  | Menu1   Menu2   Menu 3   Menu4     |                                                 |
| Local Navigation | Contextual Navigation (News, ... ) | Search                                          |
| Sub Menu 1       | Content                            | Sub Site Directory                              |

|                                              |                       |  |
|----------------------------------------------|-----------------------|--|
| Sub Menu 2                                   | Contextual Navigation |  |
| Supplemental Navigation<br>Index<br>Site Map |                       |  |
| Courtesy Navigation<br>Terms of Use , ...    |                       |  |

A wireframe of the main page

Once the wireframes are agreed upon, develop prototypes of parts of the site to test what it feels like to move around within the design, if possible.

Prototyping means creating an actual, functional version of a website using special prototyping tool. It uses the same navigation structure and layout as your wireframe, so you can easily observe how the users interact with the design that you have created. Prototypes are useful for testing site navigation with users. The prototypes should incorporate enough pages to assess accurately what it is like to move from menus to content pages. Creating a prototype also allows the web designers to develop relations between how the site looks and how the navigation interface supports the information design.

You can find a selection of wireframe and prototyping tools at: <http://www.onextrapixel.com/2013/03/01/22-good-prototype-and-wireframe-tools-for-mobile-and-web-design/>; and <http://www.hongkiat.com/blog/wireframing-prototyping-tools/>.

Below are some best practices for designing the layouts for specific pages:

- Designing Home Page Layout

The homepage is different from all other Web site pages. A well-constructed homepage will project a good first impression to all who visit the site.

It is important to ensure that the homepage has all of the features expected of a homepage and looks like a homepage to users. A homepage should clearly communicate the site's purpose, and show all major options available on the Web site. Generally, the majority of the homepage should be visible 'above the fold,' and should contain a limited amount of prose text. Designers should provide easy access to the homepage from every page in the site.

The followings are the guiding notes for homepage design:

- Enable users to access the homepage from any other page on the Web site

Many users return to the homepage to begin a new task or to start a task over again. Create an easy and obvious way for users to quickly return to the homepage of the Web site from any point in the site.

Many sites place the organization's logo on the top of every page and link it to the homepage. While many users expect that a logo will be clickable, many other users will not realize that it is a link to the homepage. Therefore, include a link labeled 'Home' near the top of the page to help those users.

- Place Important Items Consistently

Put important, clickable items in the same locations, and closer to the top of the page, where their location can be better estimated.

- Create a Positive First Impression of Your site

Treat your homepage as the key to conveying the quality of your site.

- Communicate the Web Site's Value and Purpose

Most people browsing or searching the Web will spend very little time on each site. Emphasize what the site offers that is of value to users, and how the site differs from key competitors. Many users waste time because they misunderstand the purpose of a Web site. In one study, most users expected that a site would show the results of research projects, not merely descriptions of project methodology.

In some cases the purpose of a Web site is easily inferred. In other cases, it may need to be explicitly stated through the use of brief text or a tagline. Do not expect users to read a lot of text or to click into the Site to determine a Site's purpose. Indicating what the Site offers that is of value to users, and how the Site differs from key competitors is important because most people will spend little time on each Site

- Limit Prose Text on the Homepage

The first action of most users is to scan the homepage for link titles and major headings. Requiring users to read large amounts of prose text can slow them considerably, or they may avoid reading it altogether

- Ensure the Homepage Looks like a Home Page

It is important that pages 'lower' in a site are not confused with the homepage. Users have come to expect that certain actions are possible from the homepage. These actions include, among others, finding important links, accessing a site map or index, and conducting a search.

- Limit Homepage Length

Limit the homepage to one screenful of information, if at all possible.

- Announce Changes to a Web Site

Announce major changes to a Web site on the homepage—do not surprise users.

- Attend to Homepage Panel Width

The width of panels seems to be critical for helping users understand the overall layout of a Web site. In one study, users rarely selected the information in the left panel because they did not understand that it was intended to be a left panel. In a subsequent study, the panel was made narrower, which was more consistent with other left panels experienced by users. The newly designed left panel was used more.

- Designing Page Layout

- Place important items consistently, usually toward the top and center of the page.
- All items should be appropriately aligned on the pages.
- Structure pages so that items can be easily compared when users must analyze those items to discern similarities, differences, trends, and relationships.
- Place the primary navigation menus in the left panel, and the secondary and tertiary menus together.
- Pages need to show a moderate amount of white space—too much can require.
- considerable scrolling, while too little may provide a display that looks too ‘busy.’
- Provide feedback to let users know where they are in the Web site. Examples of feedback include providing path and hierarchy information (i.e., ‘breadcrumbs’), matching link text to the destination page’s heading, and creating URLs that relate to the user’s location on the site. Other forms of feedback include changing the color of a link that has been clicked (suggesting that destination has been visited), and using other visual cues to indicate the active portion of the screen.
- Ensure that tab labels are clearly descriptive of their function or destination.
- Use ‘sequential’ menus for simple forward-moving tasks, and use ‘simultaneous’ menus for tasks that would otherwise require numerous uses of the Back button.
- Use ‘Glosses’ to Assist Navigation
- Ensure that navigation tabs are located at the top of the page, and look like clickable versions of real-world tabs.
- It is also important to ensure that page layout does not falsely convey the top or bottom of the page, such that users stop scrolling prematurely.
- When a Web page contains prose text, choose appropriate line lengths. Longer line lengths usually will elicit faster reading speed, but users tend to prefer shorter line lengths. Pages should be long enough to adequately convey the information, but not so long that excessive scrolling becomes a problem. If page content or length dictates scrolling, but the page’s table of contents needs to be accessible, then it is usually a good idea to use frames to keep the table of contents readily accessible and visible in the left panel.

- On long pages, provide a 'list of contents' with links that take users to the corresponding content farther down the page.
- Use an appropriate page layout to eliminate the need for users to scroll horizontally.
- Use a fluid layout that automatically adjusts the page size to monitor resolution settings that are 1024x768 pixels or higher.
- Format information for reading and printing.
- Designing Site Map Layout

A typical sitemap presents the top few levels of the information hierarchy. It provides a broad view of the content in the web site and facilitates random access to segmented portions of that content. A sitemap can employ graphical or text-based links to provide the user with direct access to pages of the site.

A sitemap is most natural for web sites that lend themselves to hierarchical organization. If the architecture is not strongly hierarchical, an index or alternate visual representation may be better. You should also consider the web site's size when deciding whether to employ a sitemap. For a small site with only two or three hierarchical levels, a sitemap may be unnecessary.

The design of a sitemap significantly affects its usability. When working with a graphic designer, make sure he understands the following rules of thumb:

1. Reinforce the information hierarchy so the user becomes increasingly familiar with how the content is organized.
2. Facilitate fast, direct access to the contents of the site for those users who know what they want.
3. Avoid overwhelming the user with too much information. The goal is to help, not scare, the user.

Finally, it's worth noting that sitemaps are also useful from a search engine optimization perspective, since they point search engine spiders directly to important pages throughout the web site.

- Designing Site Indexes Layout

Similar to the back-of-book index found in many print materials, a web-based index presents keywords or phrases alphabetically, without representing the hierarchy.

Unlike a table of contents, indexes are relatively flat, presenting only one or two levels of depth. Therefore, indexes work well for users who already know the name of the item they are looking for. A quick scan of the alphabetical listing will get them where they want to go; there's no need for them to understand where you've placed that item within your hierarchy.

A major challenge in indexing a web site involves the level of granularity. Do you index web pages? Do you index individual paragraphs or concepts that are presented on web pages? Or do you index collections of web pages? In many cases, the answer may be all of the above. Perhaps a more valuable question is: what terms are users going to look for? The answers should guide the index design. To find those answers, you need to know your audience and understand their needs. You can learn more about the terms people will look for by analyzing search logs and conducting user research.

There are two very different ways to create a site index. For small web sites, you can simply create the index manually, using your knowledge of the full collection of content to inform decisions about which links to include. This centralized, manual approach results in a one-step index.

In contrast, on a large site with distributed content management, it may make sense to use controlled vocabulary indexing at the document level to drive automatic generation of the site index. Since many controlled vocabulary terms will be applied to more than one document, this type of index must allow for a two-step process. First the user selects the term from the index, and then selects from a list of documents indexed with that term.

- Designing Guides Layouts

Guides can take several forms, including guided tours, tutorials, and micro-portals focused around a specific audience, topic, or task. In each case, guides supplement the existing means of navigating and understanding site content.

Guides often serve as useful tools for introducing new users to the content and functionality of a web site.

Guides typically feature linear navigation (new users want to be guided, not thrown in), but hypertextual navigation should also be available to provide additional flexibility. Screenshots of major pages should be combined with narrative text that explains what can be found in each area of the web site.

Rules of thumb for designing guides include:

The guide should be short.

- 1) At any point, the user should be able to exit the guide.
- 2) Navigation (Previous, Home, Next) should be located in the same spot on every page so that users can easily step back and forth through the guide.
- 3) The guide should be designed to answer questions.
- 4) Screenshots should be crisp, clear, and optimized, with enlarged details of key features.
- 5) If the guide includes more than a few pages, it may need its own table of contents.

- Designing Search Layout

As we noted earlier, the searching system is a central part of supplemental navigation.

Search is a favorite tool of users because it puts them in the driver's seat, allowing them to use their own keyword terms to look for information. Search also enables a tremendous level of specificity. Users can search the content for a particular phrase that is unlikely to be representing a sitemap or site index.

However, the ambiguity of language causes huge problems with most search experiences. Users, authors, and information architects all use different words for the same things.

## 2.2 Managing the Content

### Ø What It Is

Content management, or CM, is the set of processes and technologies that support the collection, managing, and publishing of information in any form or medium. When stored and accessed via computers, this information has come to be referred to, simply, as content or, to be precise, digital content. Digital content may take the form of text (such as electronic documents), multimedia files (such as audio or video files), or any other file type that follows a content lifecycle requiring management.

In the planning stage, you developed an inventory to plan and prioritize the content that you will have on your website. Here, you need to set the strategy for managing the content by:

- Use standard metadata to develop and maintain a detailed inventory of your website content, which will help you manage your website content.
- Design and maintain a workflow for the content lifecycle of your website by putting in place the mechanism for managing contents including roles, responsibilities, rules and processes for each five phases of the content lifecycle.
- Put in place a process for content archiving when content is no longer required on the website to ensure that it can be accessed in the future.

### Ø Why It's Important

Content management practices and goals vary by mission and by organizational governance structure. News public websites use content management, but in different ways.

For example, some digital content is created by one or more authors. Over time that content may be edited. One or more individuals may provide some editorial oversight, approving the content for publication. Publishing may take many forms: it may be the act of "pushing"

content out to others, or simply granting digital access rights to certain content to one or more individuals. Later that content may be superseded by another version of the content and thus retired or removed from use.

## Ø How to Implement

### a. Using Metadata to Manage Content

When it comes to definitions, metadata is a slippery fish. Describing it as “data about data” isn’t very helpful. The following excerpt from Dictionary.com takes us a little further:

In data processing, meta-data is definitional data that provides information about or documentation of other data managed within an application or environment. For example, meta-data would document data about data elements or attributes (name, size, data type, etc.) and data about records or data structures (length, fields, columns, etc.) and data about data (where it is located, how it is associated, ownership, etc.). Meta-data may include descriptive information about the context, quality and condition, or characteristics of the data.

Metadata is also essential for identifying, re-using, managing, evaluating and preserving information. Use of metadata becomes increasingly important with the growth of the amount of information held by government and the need for integrated services.

The Iraqi National Government Interoperability Framework and National Enterprise Architecture of the Government of Iraq Version 0.9 recommend the 15-element Simple Dublin Core from the Dublin Core Metadata Initiative, which can be used for simple descriptions.<sup>1</sup> These are:

1. Title – Name of Page
2. Creator – Person responsible for making the content of page
3. Subject – Topic of page expressed in keywords (taxonomy)
4. Description – About the content
5. Publisher – The entity responsible for making the resource available
6. Contributor – An entity responsible for making contributions to the content
7. Date – ISO 8601 Date and Time Format YYYY-MM-DD
8. Type – nature of content, (DCMI Type Vocabulary – Text, Image, Dataset, Event, Service, Software)
9. Format – media format, e.g. image/gif, video/mpeg
10. Identifier – URL, ISBN
11. Source – Reference to a resource from which the present content is derived
12. Language – ISO639: en, ar, ku
13. Relation – Reference to a related resource

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<sup>1</sup> <http://dublincore.org/documents/2005/08/15/usageguide/elements.shtml>.

14. Coverage – The extent or scope of content. Include spatial location, temporal period or jurisdiction
15. Rights – Copyright or access information, e.g. access limited to staff members

The Dublin Core was developed to be simple and concise, and to describe web-based documents.

Using the 15-element Simple Dublin Core, create a spreadsheet for a detailed content inventory of your website content. Ensure that it is kept up-to-date.

| N<br>o. | Titl<br>e | Creat<br>or | Subje<br>ct | Descript<br>ion | Publis<br>her | Contribu<br>tor | Dat<br>e | Typ<br>e | Form<br>at | Identif<br>ier | Sour<br>ce | Langua<br>ge | Relati<br>on | Covera<br>ge | Righ<br>ts |
|---------|-----------|-------------|-------------|-----------------|---------------|-----------------|----------|----------|------------|----------------|------------|--------------|--------------|--------------|------------|
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |

This content inventory can also be generated on a content management system (CMS) to help you manage and find content easily. For example, finding all content on a particular subject, or developed by a particular creator. See section below for guidelines on selecting a CMS.

The use of standardized metadata across public sector organizations is critical to allow for the exchange of data. For example, by insisting on using the metadata “creator” and not other similar terms such as “author” or “developer” to represent the person responsible for making the content of page.

#### b. Developing a Content Workflow and Process and Establishing Mechanisms for Managing Content

Content management experts define three primary content management governance structures: localized, centralized, and federated—each having its unique strengths and weaknesses.

##### Localized Governance:

By putting control in the hands of those closest to the content, the context experts, localized governance models empower and unleash creativity. These benefits come, however, at the cost of a partial-to-total loss of managerial control and oversight.

##### Centralized Governance:

When the levers of control are strongly centralized, content management systems are capable of delivering an exceptionally clear and unified brand message. Moreover, centralized content management governance structures allow for a large number of cost-savings opportunities in large enterprises, realized, for example, (1) the avoidance of duplicated efforts in creating,

editing, formatting, repurposing and archiving content, (2) through process management and the streamlining of all content related labor, and/or (3) through an orderly deployment or updating of the content management system.

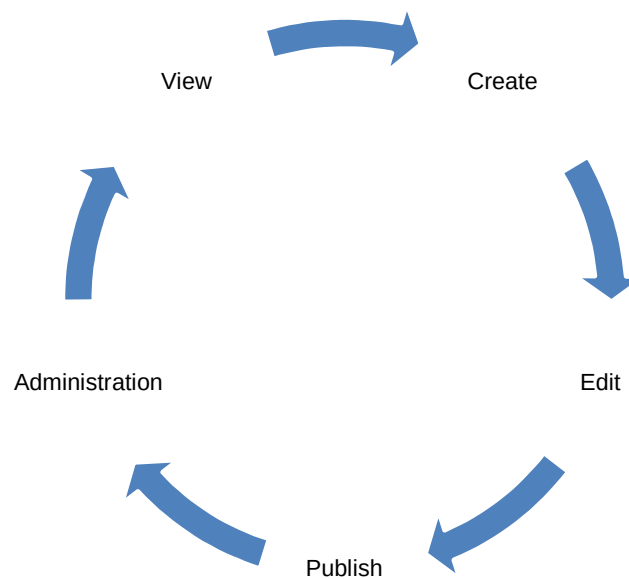
#### Federated Governance:

Federated governance models potentially realize the benefits of both localized and centralized control while avoiding the weaknesses of both. While content management software systems are inherently structured to enable federated governance models, realizing these benefits can be difficult because it requires, for example, negotiating the boundaries of control with local managers and content creators. In the case of larger enterprises, in particular, the failure to fully implement or realize a federated governance structure equates to a failure to realize the full return-on-investment and cost-savings that content management systems enable.

#### Developing a Content Workflow and Process

Content management is an inherently collaborative process. It often consists of the following basic roles and responsibilities:

- Creator - responsible for creating and editing content.
- Editor - responsible for tuning the content message and the style of delivery, including translation and localization.
- Publisher - responsible for releasing the content for use.
- Administrator - responsible for managing access permissions to folders and files, usually accomplished by assigning access rights to user groups or roles. Admins may also assist and support users in various ways.
- Consumer, viewer or guest- the person who reads or otherwise takes in content after it is published or shared.



### Content Lifecycle

A critical aspect of content management is the ability to manage versions of content as it evolves. Authors and editors often need to restore older versions of edited products due to a process failure or an undesirable series of edits.

Another equally important aspect of content management involves the creation, maintenance, and application of review standards. Each member of the content creation and review process has a unique role and set of responsibilities in the development and/or publication of the content. Each review team member requires clear and concise review standards which must be maintained on an ongoing basis to ensure the long-term consistency and health of the knowledge base.

The Roles and Responsibilities in a Content Lifecycle can be defined as follows:

#### Create/update

- Web coordination/ Web editor from the business unit – responsible for creating and updating content of any type (e.g. text, graphics, audio, video). Content owners should have full permission to create, modify and update their own content.

For each web page or section of your web page appoint a content coordinator/editor from the relative business unit, who will be responsible for its timeliness and its accuracy, and will be officially tasked with its production and maintenance.

### Edit/review

- Web Editing Manager – could be from Media unit at your organisation, who can check content for accuracy, completeness and appropriateness. Reviewers are usually limited to making comments and change about the content. The web editing manager is also responsible for tuning the content message and the style of delivery, including translation and localization.

The use of machine or automatic translations is strongly discouraged. If organizations decide to use software assisted translation, have the translation reviewed by a qualified language professional before publishing it to the website to ensure that the translation correctly communicates the message.

### Publish

- Publisher – responsible for approving and releasing the content for use. Could be the web content manager from Media Unit.

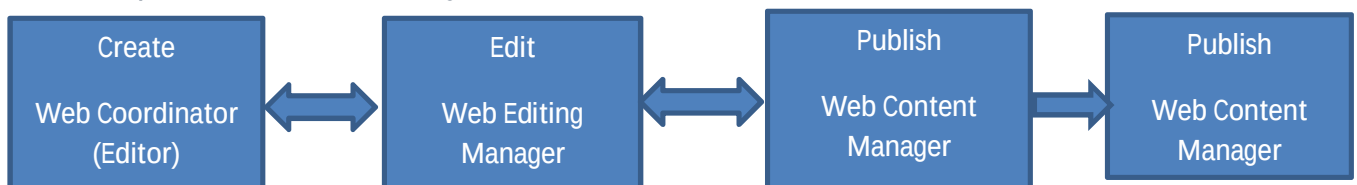
### Administration:

- Administrator – from the technical team, responsible for managing access permissions to folders and files, usually accomplished by assigning access rights to user groups or roles. Administrators may also assist and support users in various ways.

### View:

- User/viewer – the person who reads or otherwise takes in content after it is published or shared.

A sample workflow for creating content is as follows:



Organize a schedule for content creation, edit and publish

Next section will provide more detailed information on Content Management System.

- Establishing Mechanisms for Managing Content - In order to publish information that is accurate and up-to-date, you will need to obtain the commitment of the content owners to regularly produce contents for the site, and also to review these periodically, if this is possible. This is very difficult to obtain especially if this is an add-on to their work. For this reason, it is important that the task of generating and managing contents for the web is

built into the update schedule of the contents, and empower the staff who are supposed to do it by provided with the tools and the training necessary to carry out the task.

It's recommended here to use the same table utilized for Meta data by adding a field illustrate the update schedule and expiry date (i.e weekly, monthly , quarterly, yearly , ... ), this is need as well to keep a record of update date of each content

- Putting in place mechanisms to review content. After the launch of the website, the Web Content Manager is expected to periodically review the website and have discussions with the executive sponsors and other relevant stakeholders on strategies for improving the content, on new content that should be added, and on old content that should be updated or archived.
- Putting in place mechanisms to review content management process. As websites evolve, content management processes should be expected to evolve similarly. Organizations moving towards the provision of transactional and integrated services will need to assess whether:
  - o The content management processes are sophisticated enough to manage this content
  - o Additional human and financial resources are required to support existing processes
  - o New processes are required

The Web Project Manager and Web Content Manager should monitor the content management process closely and discuss with the executive sponsors and other stakeholders prior to the introduction of any changes to the content management process.

### c. Archiving Content

At this stage, it is important to review the content types on your website and decide how each type of content will be archived. For content that has an expiry date, it is important to state on the website when it will expire.

#### What to archive?

- It is important to archive not only the web page, but also all the other elements that make up the web page such as the metadata and taxonomy, and the HTML and CSS files.
- Put in place version control. Version control ensures that each time content is edited, another version (copy) is created and is assigned a new version number. This way every change can be tracked. Reviewers, for example, can look at previous versions of content to see what has changed and to ensure that changes have been correctly incorporated.

Published content on the website may get updated. It is therefore important to be able to version the web page as it is approved and published on a particular date, for tracking, legal or retrieval purposes.

This will enable you and your organization to establish exactly what information was published at a specific time in the past, providing you with key evidence in case of legal disputes or other problems connected to the contents you publish.

- Expiry dates for each content page can also be set so that particular contents such as tender documents or job announcements that have passed the application deadline will be archived.
- Archive also all strategy and planning documents related to the website.

Who will be responsible for archiving?

Decide who will be responsible for archiving. If a Content Management System is used, archiving can be automated, but a responsible person needs to set up the automated process and monitor it. The responsible person can be the Web Project Manager, Web Content Manager, and/or the Web Editing Manager.

How will it be archived?

Different types of archived content will require different approaches.

- For web content that has been edited or superseded by more recent web content, and has been removed from the site can be stored in a repository for record keeping purposes.
- There is also web content that is no longer current and will no longer be updated, but is retained on a website for reference or to provide context to current content, e.g. past news or past events. In this case, it must be clearly marked on the web page that it is archived and no longer being updated.
- There may also be web content that is no longer current and for one reason or another, the organization does not want to retain on a website, e.g. job announcements or tender documents that have passed their application deadlines. These can be stored in a repository for record keeping purposes.

Before removing content from the website, the following needs to be checked:

- Use an internal link checker in a program like Google or Bing Webmaster Tools to find other pages on your site that link to the page.
- Change links and text on those pages that link into the page to be unpublished. Find other resources to link to or simply remove the link and related text.

In case external organizations have linked to the page that has been removed from the website or users have bookmarked the page, a notice for links that are no longer available need to be developed that informs the user the content has been removed, and provide a contact point in case the user would like to inquire about the particular content.

#### Storing archived content

If your organization is using a CMS, you can un-publish the page using the tool inside the CMS, and the page will not be accessible to the public but it is retained in the CMS for future use.

For organizations that do not have a CMS, you can archive your content as follows:

- Navigate to the page URL
- Take screenshots of the page and paste them into a document
- Open the source code and copy the page code into the same document
- Include important information in the document, such as the page URL, the date, and notes on why the page was removed
- Save the document on an internal system designated for your website archives.
- Delete the page from the live website

Alternatively, you can periodically make a digital copy of your website and save it on a DVD.

## 2.3 Content Management System Recommendations and Specifications

### Ø What It Is

A content management system (CMS) is a system of hardware and software that enables different people (technical and non-technical) to collaboratively create, edit, manage and publish a variety of content, whilst being constrained by a set of rules, standards and workflows that ensure coherent, validated digital content.

### Ø Why It's Important

The content management system (CMS) is a set of automated processes that may support the following features:

- Import and creation of documents and multimedia material.
- Identification of all key users and their roles.
- The ability to assign roles and responsibilities to different instances of content categories or types.
- Definition of workflow tasks often coupled with messaging so that content managers are alerted to changes in content.
- The ability to track and manage multiple versions of a single instance of content.

- The ability to publish the content to a repository to support access to the content. Increasingly, the repository is an inherent part of the system, and incorporates enterprise search and retrieval.

## Ø How to Implement

By now you should have a clear idea of your organization's requirements for content development and management. As part of this process you need to decide whether you need a CMS and if so, which CMS to use.

The steps required in selecting a suitable CMS for your organization include the following:

- a. Decide if You Need a CMS
- b. Determine Resource Needs
- c. Document your CMS Requirements
- d. Assess the Different Content Management Systems
- e. Compare and Rate a Shortlist of Content Management Systems

### a. Decide if You Need a CMS

Business needs should be the primary driver in your choice of a CMS for your organization.

A CMS provides many advantages over static HTML content:

#### Faster Delivery of Content

Without a CMS, content updates are often done manually and require support from IT staff to post content. Updates take too long or may not happen at all. Having a modern publishing system allows you to get new content and services online faster, so you can see the benefits sooner. This is because a CMS typically has an interface similar to a word processing program, and you do not need to know markup language to add or edit content.

#### Broader Distribution of Content

A CMS makes it easier and faster to deliver content via multiple devices and platforms, such as web, social media, mobile devices and apps. This increases your reach to new audiences and will help you meet rising expectations of your target audiences.

#### Higher Quality Control

A CMS enables staff members, partners or contractors to create content, but access to publish content is restricted to approved people or positions, providing centralized control of online communications across your entire organization.

#### More Searchable Content

A CMS makes it easier to tag content with keywords and other labels and cross-link to related content on your site. This improves search engine optimization, so your content appears higher on search engine results.

#### Increased Productivity

A CMS can automate many content management tasks, such as workflow management, versioning control and content archiving. With a CMS, all content is stored in a database with date and time stamps of updates and history of who made changes.

However, if you are a small organization with one or two staff members responsible for the website, and the content does not need to be regularly updated, you may decide not to use a CMS.

### b. Determine Resource Needs

If you decide that you will invest in a CMS, you will need to make sure that you have sufficient resources (financial and human) to obtain, implement and maintain a CMS.

All CMS will require:

- IT support to install and configure the CMS
- Software developer support for customizing the CMS if required
- Ongoing general system maintenance

Commercial products generally require a potentially significant up-front investment to purchase the software and user licenses. Licensing costs vary depending on the tool and implementation, so be careful to clarify these costs with the vendor. Open source systems usually do not cost anything to license or install. See section d for more details about open source and proprietary systems.

Talk with other government agencies who already use a particular CMS, and who have sites comparable in size and scope to your own, to get an idea of how much developer support you might require.

### c. Document your CMS Requirements

Revisit your website goals, the target audiences' needs and the content inventory developed in the planning stage, and look at what your CMS requirements are that will help to achieve your goals. Consider, for instance:

- Ease of use for new users, e.g. user-friendly WYSIWYG interface, no knowledge of HTML required

- Ease of use for advanced users, e.g. administrator functions, such as version control and assigning roles and access, are intuitive; and online training and documentation available
- Interface requirements
  - Web/browser-based, accessible 24/7 from anywhere
  - Run unchanged across different Internet browsers
- Functionality requirements – for content organization and categorization
  - Presents the website within a folder structure
  - Easily change information architecture of website and navigation system and layout design
  - Easily create and change labels for content categories in the header, footer and menus
  - Easily move content around the site and between directories (should not have to delete content and recreate it elsewhere to move it)
  - Built-in fast, flexible search engine
  - Able to do simple search and advanced search
  - Able to search in multiple types of files (HTML, PDF, Word, Excel)
  - CMS-generated site map
  - Breadcrumb
- Functionality requirements – for content development and management
  - Automated workflow management, from content creation to archiving, e.g.
    - Customizable roles for writers, editors, publishers, etc.
    - Customizable workflow
    - In-system communication between roles, including notifications
    - Able to handle the content workflow of your organization
  - Version control and the ability to rollback/republish previous version
  - WYSIWYG editor
  - Basic photo editing (crop, resize, etc.)
  - Form building with backend data management (such as registration system)
  - Spell checker
  - Able to manage multi-language websites
  - Flexible metadata, and comes with Dublin Core metadata as a standard
  - Easily insert/embed various types of content (e.g., insert HTML snippet for video or Twitter feed)
  - Provide an automatic, default assignment of a page "owner", based on username login
  - Provide an automatic, default assignment of publication date and option to add expiry date
  - Once a page has expired, archiving is automated
  - Support content archiving, e.g. identification of affected pages, ability to un-archive page, allow search for archived content
  - Common content templates available for basic web pages, news and events.
  - Able to revise existing content templates and create new content templates

- o Able to add admin notes to pages within the CMS along with guidance for content creation
- o Support for web accessibility, e.g. able to add alternate text to images
- o Support for search engine optimization, e.g.
  - Able to create hierarchical taxonomy and tag content
  - Creates friendly URLs, built for SEO and for humans
- User Management and users roles and administration
  - o Each user that is part of the portal management team, members or otherwise is a user.
  - o Each user will have an editable profile to be used for identifying his access, including standards and the administrator users.
  - o Each user profile consists of a name, user id, email address, etc.
  - o Admin authorized users will be able to add/modify/delete users in the system.
  - o Each user is part of a group; where the privileges to be set for the groups.
  - o The group privileges will cover all actions and areas that the user is allowed to access to various protected parts of the portal.
  - o A role is a relationship that a person has to the content management or portal.
  - o The role identifies the activity of the relationship
  - o A role has a type that identifies the activity of the role.
  - o Typical roles are admin, add, edit, delete, archive, authorize, ... .
  - o A role contains access right information about the user that is used to provide security access to various protected parts of the portal.
  - o The portal must provide a means for users to login
  - o All users must login to the portal to access the content management systems or unauthorized contents.
  - o The login must comprise of two fields, username and password.
  - o The password field must be hidden using a HTML password field type.
  - o Once a user is logged in their username will be displayed in the page header.
  - o The portal and content will have its own administration.
  - o The admin web pages are accessible only to the portal administrator role.
  - o The portal shall contain a set of pages for performing administrative tasks.
  - o An administrator can edit user of a portal.
  - o An administrator can edit user of a content management.
  - o An administrator can edit the forums of a portal.
  - o An administrator can edit the access roles and groups
  - o An administrator can edit all non-functional requirements of the portal (structure, classifiers, ...)
- Operational, technical and other requirements
  - o Must work with your current web hosting platform and other IT systems. Not every CMS will work with every hosting solution.
  - o Able to provide CMS technical support
  - o Low-cost or no-cost CMS licensing and support

- o Is flexible and easy to customize, such as turning features on/off
  - o Low complexity to maintain the CMS software
  - o Stability of the code base that the CMS is deployed in
  - o Able to manage both Internet and Intranet sites
  - o Low level of effort required to migrate content into the CMS
  - o Secure - Has a good security track record
  - o Backup automated and can be done through the web interface
  - o Upgrade cost is minimal, and automated migration for upgrades between minor versions
  - o Ability to integrate with external systems such as commercial web analytics tools, linking checking tools, anti-virus software, etc.
  - o Able to support the size and type of website you have
- Availability of social media elements either as part of the CMS or integrating a third party tool
    - o Wikis
    - o Live chat
    - o Discussion forums
    - o Event calendars & management including invitations
    - o Feed ingestion (Twitter feeds, listserv topics)
    - o Feed output (RSS, page subscriptions & monitoring, etc.)
    - o Newsletter management system
    - o Photo galleries
    - o Polls, surveys, quizzes
    - o User comments and contributions
    - o Video and audio hosting (as opposed to merely embedded content)
- Ability to integrated with other operating system in the organisation

Using the above list of requirements as a starting point, document your organization's CMS requirements. Based on these requirements, you can assess the suitability of the different types of CMSes.

#### d. Assess the Different Content Management Systems

There are many different types of CMSes, from proprietary commercial tools, to systems developed in-house, to open source tools with a community of dedicated developers working to continually improve the product. Because there are pros and cons with any of these tools, the system you choose should reflect your organization's goals and objectives.

#### Open Source CMS

Open source CMSes provide several advantages, the most important being:

- The ability to customize to your specific needs
- Support from active developer communities who share code and contribute modifications to continually improve the product
- Free or has low-cost licensing fees, so could provide substantial cost savings

Open source offers the potential for collaboration across agencies to develop systems specifically tailored to government needs.

One downside to open source is that you generally need technical expertise on your team to maintain and keep it up-to-date. If you choose an open source CMS, the initial cost may be low, but you will likely need to budget for technical resources to maintain it over time.

Popular open-source systems widely used by government organizations around the world include Drupal, Plone and Wordpress.

### Proprietary CMS

Commercial or proprietary CMS tools typically offer a robust suite of features right out of the box. They may not require as much customization or configuration as some open source tools, and can easily handle basic content management tasks. Many commercial products have been on the market for a while and have evolved to provide practically any functionality you might need. Proprietary CMS often has a licensing fee.

Examples of popular proprietary systems widely used by government organizations around the world include Documentum, OpenText and Sharepoint.

Take a look at what CMSes other organizations are using. See also:

- CMSes used by U.S. government organizations (<http://www.howto.gov/web-content/technology/agency-cms-products>)
- Wikipedia's list of CMSes ([http://en.wikipedia.org/wiki/Comparison\\_of\\_content\\_management\\_systems](http://en.wikipedia.org/wiki/Comparison_of_content_management_systems))
- Usage of CMSes for websites ([http://w3techs.com/technologies/overview/content\\_management/all](http://w3techs.com/technologies/overview/content_management/all))
- Compare features in CMSes (<http://www.cmsreview.com/index.html>)

As you work through your requirements list, a few systems will begin to stand out as possible candidates. Once you have narrowed down the top 3 or 4 CMSes, it is time to test them.

Involve both content and technical teams in the process. Have content contributors try completing basic content management tasks, to see how easy it is to use the system. Web

project managers should check with the technical team that the system being considered is compatible with your organization's current web hosting platform and other IT systems; and that organization agency has the necessary technical expertise to support your selection.

## System Requirements

For system requirements you need to check:

- The application environment or server needed to run the CMS (e.g. Apache, Microsoft-IIS, Nginx, Tomcat)
- The database engine the CMS use to store content and settings (e.g. MySQL, Oracle, PostgreSQL, SQL)
- The operating system the server needs to run in order for the CMS to work (Unix or Windows)
- The programming knowledge that is needed to add or extend the capabilities of the CMS and whether this is available in your organization –
  - o There's the server-side languages (e.g. PHP, ASP.NET, ColdFusion, Perl, Ruby, Python)
  - o There's the client-side languages (e.g. Java, Javascript, Flash, Silverlight)

## e. Compare and Rate a Shortlist of Content Management Systems

The requirements developed in section c can be used to compare and rate the different CMS tools:

Step 1 – For each requirement, assess the priority factor for each requirement (3 = must have; 2 = should have; and 1 = nice to have).

Step 2 – Shortlist 3 or 4 CMS tools to compare and rate.

Step 3 – For each CMS, provide a functional score for each requirement (0 = does not meet the requirement; 1 = minimally meets the requirement; 2 = meets the requirement; and 3 = exceptionally meets the requirement).

Step 4 – For each CMS, go through each requirement and multiply the priority factor with the functional score to obtain the weighted score. The sum of this weighted score provides the final score for the particular CMS. The higher the score, the more suitable the CMS is for your organization.

| Requirement | Priority Factor             | CMS 1                             |                              | CMS 2            |                |
|-------------|-----------------------------|-----------------------------------|------------------------------|------------------|----------------|
|             |                             | Functional Score                  | Weighted Score               | Functional Score | Weighted Score |
|             | 3 = must have<br>2 = should | 0 = does not meet the requirement | Priority Factor X Functional |                  |                |

|  |                              |                                                                                                                     |       |  |  |
|--|------------------------------|---------------------------------------------------------------------------------------------------------------------|-------|--|--|
|  | have<br><br>1 = nice to have | 1 = minimally meets the requirement<br><br>2 = meets the requirement<br><br>3 = exceptionally meets the requirement | Score |  |  |
|  |                              |                                                                                                                     |       |  |  |
|  |                              |                                                                                                                     |       |  |  |
|  |                              | TOTAL SCORE                                                                                                         |       |  |  |

Once you have decided on a CMS, you need to set it up by installing and configuring the website to your requirements. And you can start creating content and incorporating your website design in the CMS. In case that you have an existing website, you will need to migrate your website content to the new CMS. This is discussed in *Part 3: Implementation*.

## 2.4 Web Design and Building

### Ø What It Is

Web design creates the look and feel for the website with images, colours, fonts and other visuals.

### Ø Why It's Important

Graphics on the website can influence and direct users' attention, prioritize the information they see, and make their interactions with your website more enjoyable and efficient.

Without the visual impact of shape, colour and contrast, pages are graphically uninteresting and will not motivate the viewer.

The visual design also gives your website an identity that should be in line with your organization and the public sector's identity as an integrated entity.

### Ø How to Implement

Your web design should be based on the wireframes developed earlier that give a basic layout of key content types like the home page, news page, list of services page, search results page, etc. It shows the arrangement of the website content and the navigation system.

Web design involves two key aspects:

- The visual interface design for the entire website
- The graphical and multimedia elements for the website such as the creation of images, animation and videos

#### Step 1: Produce design mock-ups for review and approval

In this development phase, the Web Designer or Web Design Team is responsible for creating the visual interface design for the entire website, and is expected to produce design mock-up options for the web team and stakeholders to review.

The web designer or team is also responsible for creating any graphical and multimedia elements required such as the image for the website header, the buttons, and any slideshows and animations.

#### Step 2: Create web design template and coding

Once the design is approved, they will need to be converted to a functional HTML/CSS template by a Web Developer. Sometimes, especially in smaller organizations, the Web Designer and Web Developer may be the same person.

#### Step 3: Testing

When the HTML/CSS templates are created, they need to be tested to ensure that the design displays well in different devices, operating systems and browsers, and test to ensure that the design is usable and accessible to all. This step is discussed in more detail in part 3 of the guidelines under the sub-section entitled “Testing”.

Below, steps 1 and 2 are discussed in detail.

#### Step 1: Produce design mock-ups for review and approval

A wide range of web design software is available, and the choice will depend on the Web Designer's preference. Adobe offers a suite of commercial web design software that is popular among Web Designers, but there are also many free and open source options.

When designing for public sector websites there are two common design standards commonly considered:

- Usability

Refers to designing for ease of use so that users can find what they are looking for and complete tasks on your website quickly.

- Accessibility

Refers to designing for inclusion. You are designing for the whole country—not just the ones who are used to using the web. Design for people with disabilities, the elderly and those with old IT equipment. Making your site accessible is not only morally right, it will improve your search engine rankings and expose your message to a larger audience.

The World Wide Web Consortium (W3C) provides a set of guidelines—Web Content Accessibility Guidelines WCAG 2.0<sup>2</sup>—for making website content accessible. All Iraqi public sector websites should conform to these guidelines. There are three levels of conformance: level A (the minimum level of conformance), level AA and level AAA. In many situations WCAG 2.0 Level AA is the generally accepted level of accessibility. It is not recommended that Level AAA conformance be required as a general policy for entire sites because it is not possible to satisfy all Level AAA Success Criteria for some content.

The general design guidelines below incorporate these two standards—usability and accessibility.

a. General Design Guidelines

Design should enhance the content not hide it.

|                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Colour and Contrast | <p>Colour is a basic element of design, but what many designers do not realize is that it is not a required element. Some of the best designs are done with only black and white or just a touch of one colour.</p> <p>There are many style properties that add colour, including:</p> <ul style="list-style-type: none"><li>• Foreground colour, like fonts and text</li><li>• Background colour</li><li>• Border colour</li></ul> <p>You can also add colour to your design through your images.</p> <p>For a list of colours that work well in most browsers, refer to:<br/><a href="http://webdesign.about.com/od/colorcharts/1/bl_colors.htm">http://webdesign.about.com/od/colorcharts/1/bl_colors.htm</a></p> <p>To ensure accessibility:</p> <ul style="list-style-type: none"><li>• Ensure that all information conveyed with colour is available without colour</li><li>• Ensure that foreground and background colour combination provides</li></ul> |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

<sup>2</sup> <http://www.w3.org/TR/WCAG20/>. See also <http://www.w3.org/standards/webdesign/accessibility> and <http://www.w3.org/WAI/mobile/>

|                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <p>sufficient contrast when viewed by someone having colour deficits or when viewed on a black and white screen.</p> <p>An example of the first point is when a user forgets to fill up a field on a form, the border of that field become red. In this case, a person who is colour blind will not be able to see it. Therefore, it is important to provide multiple provisions for users such as bolder border and explanatory text.</p> <p>Regarding colour contrast, there are a number of tools online<sup>3</sup> to check that the foreground and background colour provide enough of a contrast when viewed by someone having colour deficits or when viewed on a black and white screen.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Font Type and Size | <p>Review commonly used font combinations at:<br/> <a href="http://www.w3schools.com/cssref/css_websafe_fonts.asp">http://www.w3schools.com/cssref/css_websafe_fonts.asp</a>.</p> <p>CSS recognizes five generic font families:</p> <ul style="list-style-type: none"> <li>• Serif</li> <li>• Sans-serif</li> <li>• Script</li> <li>• Monospace</li> <li>• Fantasy</li> </ul> <p>If you use these font family names in your CSS, the browser will choose the typeface that is the default for that font family on the computer of the user.</p> <p>Sans-serif fonts should be the basis of your web content. They are easy to read online and there are many that are common to most computer operating systems.</p> <p>There are many units of measure you can use with CSS fonts: points, pixels, ems, ex, %, etc. To ensure accessibility, use “ems” as your font size measurement in the CSS.</p> <p>Ems is sized so that the font size is relative to the parent element. In the case of most web pages, this is the body element, and so the font is sized relative to the standard size of the browser.</p> <p>Using ems as your font size measurement ensures that your pages will be accessible to most browsers and platforms. Plus, if your users choose to change the default font size, your page will scale to that new size.</p> |
| Page Width         | Optimize for widescreen monitors around 1440 pixels wide, <sup>4</sup> (i.e., it should look                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |

<sup>3</sup> <http://www.w3.org/TR/UNDERSTANDING-WCAG20/visual-audio-contrast-contrast.html#visual-audio-contrast-contrast-resources-head>.

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
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|                               | <p>its best at this size) but make your CSS is flexible/fluid and stretches well for any resolution, from 320 to 1600 pixels wide so that it still look good and works well at other sizes.</p> <p>Make use of web logs or web analytics to find out about the most used screen size and resolution of your users.</p> <p>The three main criteria in optimizing a page layout for a certain screen size are:</p> <ul style="list-style-type: none"> <li>• Initial visibility: Is all key information visible above the fold so users can see it without scrolling?</li> <li>• Readability: How easy is it to read the text in various columns, given their allocated width?</li> <li>• Aesthetics: How good does your page look when the elements are at the proper size and location for this screen size? Do all the elements line up correctly—e.g., are captions immediately next to the photos, etc.?</li> </ul>                                                                                                                                                                                                                                                           |
| Links                         | <p>Links must be visually identifiable with or without colour. Links that display within a navigation column or button bar are clearly links and do not need underlining. However, links that appear within body text should be underlined to set them off from the surrounding text.</p> <p>Distinguish between visited and unvisited links: Most web sessions involve trial and error. By providing different link colours for visited and unvisited links, you allow users to identify the paths they have already taken.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Navigation and Labeling Style | <p>Location of navigation: Users expect to find horizontal navigation across the top or vertical navigation at the side of the website (right side for Arabic text and left side for English text). Putting your navigation in standard places makes your site easier to use.</p> <p>Number of navigation links: Do not put too many links in your navigation. Every time you remove a menu item, the remaining items become more prominent. Challenge yourself to prioritize your navigation links to five items.</p> <p>Navigation depth – three-click rule: If the user needs more than three clicks from anywhere in the site to get what they need, then the navigation/site structure is too complex. The priority information and services on your website should be accessible with one click from your homepage.</p> <p>Highlight the current page or section on the navigation labels: This indicates to people viewing the pages where they are. To do this, do one or more of the following:</p> <ul style="list-style-type: none"> <li>• Make a change to the label style (e.g. bold text, shading or bold border) to make the label stand out visually</li> </ul> |

<sup>4</sup> <http://www.nngroup.com/articles/computer-screens-getting-bigger/>.

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | <ul style="list-style-type: none"> <li>• Disable the link of the current page</li> <li>• Show the current page via a hierarchical list</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Breadcrumbs                    | <p>Breadcrumb is a type of navigation scheme that reveals the user's location in a website. They are an effective visual aid that indicates the location of the user within the website's hierarchy, making it a great source of contextual information for landing pages.</p> <ul style="list-style-type: none"> <li>• Use breadcrumb navigation for large websites and websites that have hierarchically arranged pages.</li> <li>• Breadcrumb navigation should be regarded as an extra features and should not replace effective navigation menus. Therefore, the size of breadcrumbs should be smaller, or less prominent than the primary navigation menu.</li> <li>• The commonly accepted and most recognizable symbol for separating hyperlinks in a breadcrumb trail is the "greater than" symbol (&gt;). Typically, the &gt; sign is used to denote hierarchy, as in the format of Parent category &gt; Child category.</li> <li>• Breadcrumb trails are usually displayed in the top half of the page, below the primary navigation menu if a horizontal menu layout is used.</li> </ul>                                                                                                                                                                                             |
| Keyboard Access                | <p>Keyboard access is important because users with vision impairments will not have good hand-eye co-ordination and are more likely to interact with the website solely through the use of their keyboard.</p> <ul style="list-style-type: none"> <li>• Check that you can use the tab key to access all the elements on your web page, including links, form fields, buttons and media player controls. Make sure there are no actions or options that you cannot get to, for example, because they are only available on mouse hover or click.</li> <li>• Check that you can tab away from all elements that you can tab into. A common problem is the keyboard focus gets caught in media controls and you cannot get out; it's called the "keyboard trap".</li> <li>• Check that the tab order follows the logical reading order (for example, for left-to-right languages: top to bottom, left to right).</li> <li>• Check that the focus does not stop at the end of the page; it goes to the top of the page or to the browser controls and then the page.</li> <li>• Check that the focus indicator is clearly visible as you tab through the elements, that is, you can tell which element has focus, for example, links have a gray outline around them or are highlighted.</li> </ul> |
| Cater to Adaptive Technologies | <p>Many persons with disabilities use adaptive technologies to overcome the challenges they face in going online. Examples include screen readers used by the visually impaired to read out what is written.</p> <p>A "skip to content" should be provided to allow site users to go directly to the main content of the webpage bypassing the navigation. As the main content is not usually the first thing on the page, screen reader users are often forced to listen to a long list of navigation links and other elements before they reach the main content. For keyboard users, they are forced to tab through all the top</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

|                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                | links in order to reach the main content if the “skip to content” function is not available.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Multilingual Website           | <p>The website should be implemented as an integrated multilingual website that offers only one website with multiple visitor-selected language outputs. In such a case, users may switch between languages on any page on the website. A different set of CSS stylesheets need to be developed for the different language outputs.</p> <ul style="list-style-type: none"> <li>• The length of words: Content written in one language may take up more or less space on the page than another language. The design of the website should cater for different length words used throughout the site. Use real text in the different languages to include in your design.</li> <li>• The font size: Arabic characters need to be displayed a bit bigger to be readable.</li> <li>• The direction of text: The design and layout need to be reversed for English and Arabic versions.</li> </ul> <p>Make sure the language is identified in the code of your website. Use the Unicode standard.<sup>5</sup> The language must be identified in the code of the page in order for assistive technologies to interpret it correctly. Once recognized, these technologies can automatically switch to that language, adjusting the accent, pitch and speaking rate of the content depending on the language in question.</p> |
| Designing for Multiple Devices | <p>From smartphones to tablets to everything in between, a wider variety of computing devices than ever before are being used to get online. These devices have different screen sizes and resolutions, input methods, and even different modes of use.</p> <ul style="list-style-type: none"> <li>• Start designing for the small screen first so that you focus on what are the most important things you would like to have on your website, and as you design for larger screen, you can add more features and functionalities. The rationale for this is that it is easier to add than to eliminate.</li> <li>• Adjust font and image size: On your CSS, you can adjust the font and image size based on the type of devices that users are using to access your website.</li> <li>• Build for touch: Most mobile devices are touch screen, so the buttons on the website need to be larger than normal in order to aid navigation and ensure users can select the correct link.</li> </ul>                                                                                                                                                                                                                                                                                                                       |

## Step 2: Create web design template and coding

The content and design that has been developed needs to be converted into codes to build the website.

### a. HTML and CSS

<sup>5</sup> <http://www.unicode.org/>

HTML or HyperText Markup Language is an authoring language that defines the structure and layout of a website by using a variety of tags and attributes.

In properly formed HTML, all web page code is contained within two basic tags:

- Head (<head>...</head>) – where your web page declares its code standards and document type to the web browser and where the page title resides.
- Body (<body>...</body>) – encompasses all the content you would like to include in your web page.

There are hundreds of other tags used to format and layout the information in a web page (e.g. headings, paragraphs, lists, links, quotes, etc.). HTML by itself is static but it can embed programming languages such as Javascript and PHP to create interactions such as: send an e-mail, ask the bank how much money you have in your account, or tell a photo slideshow to advance to the next image.

The purpose of a web browser is to read HTML documents and compose them into visible or audible web pages. The browser does not display the HTML tags, but uses the tags to interpret the content of the page.

Web browsers can also refer to Cascading Style Sheets (CSS) to define the appearance and layout of text and other elements. It's a web design template (a separate file) that you can apply to all (or most) of the pages on your website.

The W3C, maintainer of both the HTML and the CSS standards, encourages the use of CSS over explicit presentational HTML so that you separate the style (in CSS) from the content (in HTML).

The advantages of using a template system include the following:

- It allows you to make your most important design decisions at the beginning, and then just focus on content
- It allows you to quickly create new pages based on your standard design
- It will result in a consistent appearance of the website
- It is easier to update the appearance of your website. You can change the font style for all headings on your website by modifying the code on your style sheet.
- It leads to faster load time. By using an external .CSS file, you can significantly reduce the load time of every page on your website. This is because a browser can cache all of the style information for your pages instead of needing to load every tag over and over again.
- The separation of content and style allows the interaction of assistive technology (e.g. screen reader) with content and allows users to modify the presentation of content to suit their needs (e.g. increase font size)

## b. Web Programming and Databases

Most websites make use of both a client-side and a server-side language.

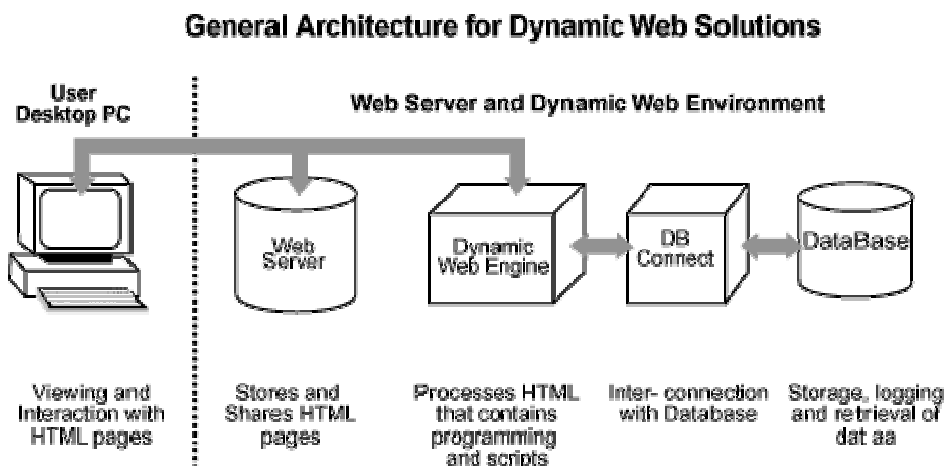
HTML, CSS and Javascript mentioned above are client-side programming languages. The client of a website refers to the web browser that is viewing it. Client side programming has to do with the user interface, with which the user interacts. Its main tasks are: interacting with the server—sending requests and retrieving data from it, validating input, animation, applying styles, etc.

Another type of language is the server-side programming language. Server-side programming is the general name for programs that run on a server. Server side programming is about generating dynamic content by searching a database in order to show the user personalized information.

Server-side programming can be done in a lot of languages, for example in PHP, ASP.NET, Java, Cold Fusion, Perl and Python. It involves:

- Querying the database
- Encoding the data into html
- Inserting and updating information in the database

Although there are things both client-side and server-side programming can do, client-side scripting tend to be used for things that require user interaction. Server-side scripting is used for things that require access to a database.



Source: [http://www.keypoint.com/services/dynamic\\_web\\_arch.html](http://www.keypoint.com/services/dynamic_web_arch.html)

As shown in the diagram above, static web pages are simply served by a web server, while dynamic web pages are parsed through a separate engine that processes backend programming code to execute the intended application. The program results are then integrated back in an HTML page and is sent out to the browser for display.

The advantages of client-side scripting including faster response times, a more interactive application, and less overhead on the web server. Client-side code is ideal for when the page elements need to be changed without the need to contact the database. A disadvantage of client-side scripting is that scripting languages require more time and effort.

A disadvantage of server-side processing is that it can introduce processing overhead that can decrease performance and force the user to wait for the page to be processed and recreated. Once the page is posted back to the server, the client must wait for the server to process the request and send the page back to the client. However, server-side programming is more secure and is preferred by most programmers, e.g. server-side programming can be encrypted when users send form variables, protecting users against any hack attempts. Server-side programming also has more options for languages than client-side.

According to W3Techs.com, the most popular programming languages are as follows:

#### Most popular server-side programming languages

| Language      | Usage |
|---------------|-------|
| 1. PHP        | 81.5% |
| 2. ASP.NET    | 18.3% |
| 3. Java       | 2.7%  |
| 4. ColdFusion | 0.8%  |
| 5. Perl       | 0.6%  |

Percentage of sites as of 1 November 2013.

Note: a website may use more than one server-side programming language.

Source: W3Techs.com.

#### Most popular client-side programming languages

| Language       | Usage |
|----------------|-------|
| 1. JavaScript  | 88.9% |
| 2. Flash       | 15.9% |
| 3. Silverlight | 0.2%  |
| 4. Java        | 0.1%  |

Percentage of sites as of 1 November 2013.

Note: a website may use more than one server-side programming language.

Source: W3Techs.com.

More detailed analysis of W3Techs.com data revealed the following findings:<sup>6</sup>

- PHP is the most used server-side programming language and its usage is increasing.
- PHP is used by many sites but with lower traffic than other server-side languages.
- Java is server-side programming language leader in high traffic sites.
- ASP.NET language usage is decreasing.
- Perl, Python, Javascript, Ruby and ColdFusion are used by a few sites but with high traffic.
- Content Management Systems usage is increasing.

The table below lists some popular websites and the platform and languages that they use.

| Site                          | Up Since      | Server Platform | Programming Language      |
|-------------------------------|---------------|-----------------|---------------------------|
| Google.com                    | November 1998 | Linux           | C, Java, C++, PHP & MySQL |
| Facebook.com                  | February 2004 | Linux           | PHP, MySQL and C++        |
| YouTube.com                   | February 2005 | Linux           | C, Java and MySQL         |
| Yahoo.com                     | August 1995   | Linux           | C++, C, Java, PHP & MySQL |
| MSN.com (owned by Microsoft)  | August 1995   | Windows         | ASP.net                   |
| Live.com (owned by Microsoft) | August 2008   | Windows         | ASP.net                   |
| Wikipedia                     | January 2001  | Linux           | PHP & MySQL               |
| Amazon.com                    | October 1995  | Linux & Solaris | C++, Java, J2EE           |
| WordPress.com                 | November 2005 | Linux           | PHP & MySQL               |

Since most of the websites use either PHP or ASP.NET for their server-side programming, a comparison is made between them in the table below.

|                  | PHP                                                   | ASP.NET                                         |
|------------------|-------------------------------------------------------|-------------------------------------------------|
| Developer        | The PHP Group                                         | Microsoft Corporation                           |
| Cost             | Free download and hosting on open source Linux server | Free download but possible Windows hosting cost |
| Operating System | All modern operating systems                          | Platform dependent—Windows                      |

<sup>6</sup> <http://blog.websitesframeworks.com/2013/03/programming-language-statistics-in-server-side-161/>.

|                                           |                                                                        |                                                                                                                                                                                                                                             |
|-------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                           | including mobile platforms (iOS and Android)                           | operating system required to develop in ASP.NET (although Mono Project has developed an alternative open-source UNIX version for cross-platform purposes)                                                                                   |
| Web hosting and web browser compatibility | PHP is hosted by most web servers. PHP has cross-browser compatibility | Can be deployed on any web server that has the .NET Framework and Internet Information Services (IIS) installed. ASP.NET has cross-browser compatibility but may require further scripting to resolve issues for Chrome and Safari browsers |
| Implementation language                   | C-based language                                                       | .NET languages (C#, VB.NET, JScripts)                                                                                                                                                                                                       |
| Ease of use                               | Simple, text based language with numerous online tutorials             | Easy to use particularly with Microsoft's integrated development environment software, WebMatrix                                                                                                                                            |

Source: <http://www.interactiontalks.com/server-side-scripting-languages-comparison-high-school-web-design-lesson-7/>

### Documentation

Make sure there is detailed, accurate documentation of the code itself, how all the components fit together, the deployment plan/policies/process/protocols, troubleshooting, maintenance and training/instructions for use. You will probably find that you can reuse much of this information in the future. Your team will be glad they do not have to re-invent the wheel every time and your stakeholders will be impressed at your quick, trouble-free deployments.

#### c. Organizing your Content with Folders

When creating your website, it is important to arrange files on your web server to minimize load time and maximize findability, both for you and for the users who visit your site. Done well, this will reduce the time to manage and maintain the content once the website is live.

On your web server you should have a root folder where all webpages and web documents are stored. The information in the root folder and its sub-folders is accessed via URLs by users to the site.

All folders with html files within them require an index.html file.

When creating the first webpage in a folder or a sub-folder please name the webpage index.html. This is the first page the webserver loads when a visitor visits a folder or a sub-folder without using a page reference to .html.

As a general rule of thumb there should be a "documents" and an "images" folder in the root directory where you would save all your documents and images, respectively. In case that you will have audio and video files, you should also create a "media" folder. And you may want to have a folder for your CSS style sheets.

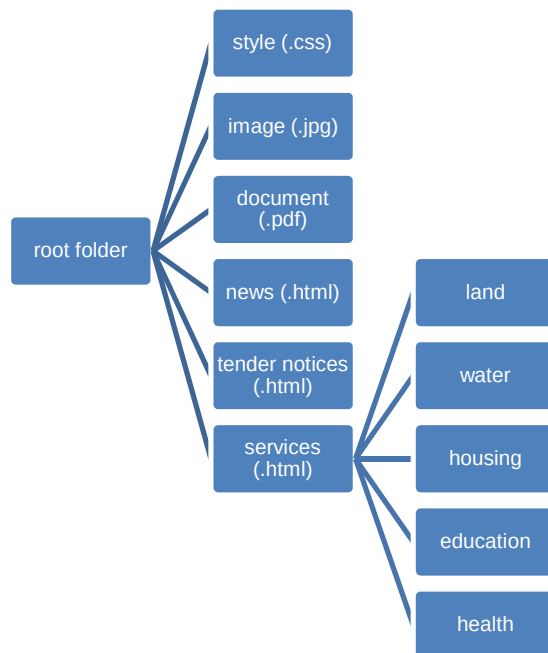
Revisit your content categorization to discuss among your web team and among Content Owners, how the folders will be organized. The folders can be organized by:

- Content Type (e.g. news, events, jobs)
- Organization/Department (e.g. by departments within your organization)
- Subject (e.g. land, water, transport)
- Service (e.g. payment, registration, complain)
- Audience Group (e.g. citizens, businesses, government)
- Location (e.g. by governorate)

The first three categories are most popular for organizing content. See figure below for one way of organizing content into folders.

In the figure, note that folders for documents, images and media within the sub-folders were not created. This is assuming that all content owners have permissions from root folder to everything within. In cases where content owners only have access to their sub-folders they should create their own documents and images folder within their sub-folders.

The location of files in the website corresponds with the URL. For education services, the URL will be <http://www.mysite.gov.iq/services/education>.



#### d. Naming Web Page Files

There are a few rules you should adhere to when naming your web page files, whether those be HTML pages, CSS documents, or images:

- File names should be written in all lowercase
- File names should never use spaces or special characters (except - and \_)
- File names should be kept relatively short
- All CSS files must end with the .css file extension
- All XHTML files must end with the .html file extension
- Your site's home page should always be named index.html
- Create short human readable names that users can remember and search engines can detect

## 2.5 Content Development and Writing

### Ø What It Is

Content development is the process of creating content efficiently and effectively. Digital content may take the form of text (such as electronic documents), multimedia files (such as audio or video files), or any other file type that requires management. In public sector websites, content broadly comprises of information and services.

To ensure that the content created is of high quality, guidelines are required for communicating information and services on websites.

### Ø Why It's Important

Content is the information provided on a Web site. Do not waste resources providing good design and content management tool to the wrong content. One study found that content is the most critical element of a Web site. Other studies have reported that content is more important than navigation, visual design, functionality, and interactivity.

### Ø How to Implement

In this section, guidelines are provided for creating text and for embedding multimedia content. Guidelines are also provided for developing the homepage, the different content types and online forms for services.

#### a. Web Writing Guidelines

Content owners/contributors and web editors should follow the web writing guidelines below.

| Type                             | Writing guidelines                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Essential Elements on a Web Page | <p>Each web page must have the following:</p> <ul style="list-style-type: none"><li>• Title</li><li>• Body text (text with more than one paragraph should have headings)</li><li>• Call to action (see below for more details)</li><li>• Name of contact person if applicable</li><li>• Date of creation (and date of update if relevant)</li></ul>                                                                                                                                       |
| Page Title, Heading and Labels   | <ul style="list-style-type: none"><li>• Use clear category labels</li><li>• Provide descriptive page title</li><li>• Use unique descriptive heading</li><li>• Highlight critical data</li><li>• Use descriptive row and column heading</li><li>• Use heading in appropriate html order</li><li>• Contains keywords that are used in searches, help the page rank high in search results, and are important to your users.</li><li>• Does not contain acronyms or abbreviations.</li></ul> |
| Body Text                        | <ul style="list-style-type: none"><li>• The intro statement should provide the context – the who, what, where, when, why, and how about the topic.</li><li>• The first few hundred characters provide a meaningful summary in search results.</li><li>• Using sub-header to break up long blocks of text, use sub-headers every 2-3 paragraphs.</li></ul>                                                                                                                                 |

|                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                | <ul style="list-style-type: none"> <li>• Describe paragraph/section content</li> <li>• Does not duplicate existing content.</li> <li>• Get right to the point, and deliver your message clearly</li> <li>• Use conversational language that your target audience will understand</li> <li>• Don't use long quotes, puns (especially if you have an international audience), and obsolete terminology (such as "check it out!," "cool stuff," and "under construction")</li> <li>• Make your content "scannable" so visitors can find what they are looking for quickly. Use the following approaches:- Bullets, Subheaders, Summaries, Typographical elements to pull out important phrases (larger type, bold face, italics—but NOT underlines, unless it is a hyperlink), Short sentences, Short paragraphs, Short pages (no more than 3-4 paragraphs), Use headlines and summaries on your home page and on all menu-style pages.</li> <li>• Does not contain acronyms or abbreviations that are not defined or used on the page.</li> <li>• Spells out acronyms before they are used.</li> </ul> |
| Call to Action | <ul style="list-style-type: none"> <li>• Every web page should have a call to action, which means you want the user to do something: "click on a link, subscribe to a newsletter, complete a form, download the mobile app". It should guide the user around your website.</li> <li>• Do not have too many call-to-action on the same page, which may overwhelm the users.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Links          | <ul style="list-style-type: none"> <li>• Use link labels and concepts that are meaningful, understandable, and easily differentiated by users rather than designers.</li> <li>• Provide links to other pages in the Web site with related content.</li> <li>• Make the link text consistent with the title or headings on the destination (i.e., target) page.</li> <li>• Ensure that items that are not clickable do not have characteristics that suggest that they are clickable.</li> <li>• Ensure that important content can be accessed from more than one link.</li> <li>• Use text links rather than image links.</li> <li>• Use color changes to indicate to users when a link has been visited.</li> <li>• Provide sufficient cues to clearly indicate to users that an item is clickable.</li> <li>• When using embedded links, the link text should accurately</li> </ul>                                                                                                                                                                                                                |

|                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                 | <p>describe the link's destination.</p> <ul style="list-style-type: none"> <li>• 'Pointing-and-clicking,' rather than mousing over, is preferred when selecting menu items from a cascading menu structure.</li> <li>• Make text links long enough to be understood, but short enough to minimize wrapping.</li> <li>• Indicate to users when a link will move them to a different location on the same page or to a new page on a different Web site.</li> <li>• If any part of an image is clickable, ensure that the entire image is clickable or that the clickable sections are obvious</li> </ul>                                                                                                                                                                                                                           |
| Text Appearance | <ul style="list-style-type: none"> <li>• Use familiar fonts that are at least 12-points.</li> <li>• Use black text on plain, high-contrast backgrounds.</li> <li>• Use background colors to help users understand the grouping of related information.</li> <li>• Ensure that the format of common items is consistent from one page to another.</li> <li>• When users must read a lot of information, use lower-case fonts and appropriate capitalization to ensure the fastest possible reading speed.</li> <li>• Ensure visual consistency of Web site elements within and between Web pages.</li> <li>• Use bold text only when it is important to draw the user's attention to a specific piece of information.</li> <li>• Change the font characteristics to emphasize the importance of a word or short phrase.</li> </ul> |

#### b. Multimedia Content Guidelines

|                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Clear Purpose of Multimedia Content | <ul style="list-style-type: none"> <li>• Use graphics and photos to illustrate/inform (not decorate), aid navigation and increase memorability.</li> <li>• Images are small, not distorted and quick to download</li> </ul>                                                                                                                                                                                                                                                                                                                                                                         |
| Follow Recommended Standards        | <p>Ideally content should be provided in HTML form unless it is not practical to do so, for example, when a document is intended for printing.</p> <ul style="list-style-type: none"> <li>• The recommended standards for documents, spreadsheets and presentations are: <ul style="list-style-type: none"> <li>o ODF (Open Document Format) family of standards</li> <li>o OOXML (Office Open XML) family of standards</li> <li>o Portable Document format (.pdf) (For non-editable, read-only documents)</li> <li>o Comma Separated Variable/Delimited files format (.csv)</li> </ul> </li> </ul> |

|                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | <ul style="list-style-type: none"> <li>• The recommended standards for images are: <ul style="list-style-type: none"> <li>o Joint Photographic Experts Group (.jpg)</li> <li>o Portable Network Graphics (.png)</li> <li>o Tag Image File Format (.tif)</li> </ul> </li> <li>• The recommended standard format for audio and video is the MPEG family of standards.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Alternative Text       | <ul style="list-style-type: none"> <li>• Provide alternative text (alt text) to multimedia content. Ensure that the text alternatives communicate the purpose of the graphic accurately. This alt text is read out by the screen reader.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Large Multimedia Files | <ul style="list-style-type: none"> <li>• Large multimedia files should not be part of your basic page design (unless your website's objective is to deliver multimedia files).</li> <li>• Inform users when they are entering a high-bandwidth area. For example, make the main page a plain HTML page that loads quickly and does not require special software.</li> </ul> <p>On the main page, include:</p> <ul style="list-style-type: none"> <li>o Descriptive information about the materials</li> <li>o Previews, such as still shots from the video</li> <li>o The running time for media clips so viewers know what to expect</li> <li>o The file size for media that downloads</li> <li>o Any special software requirements for accessing the materials</li> <li>o A download link to any required browser plug-ins</li> </ul> <ul style="list-style-type: none"> <li>• Your users should have a clear idea of your materials that allows them to judge whether they have the time and technology to view your multimedia content.</li> <li>• Give users status information and controls when you are presenting multimedia materials. Allow users to adjust the volume control and to play, pause and stop, etc. Also, provide information about the movie's download status.</li> <li>• Offer a range of choices and allow the user to select the access method. Audio and video can be embedded into web pages, presented as a download link, or made available as a podcast. <ul style="list-style-type: none"> <li>o The embedded version has the benefit of being presented within the context of the website, which means the video can have accompanying text and images that support the video materials.</li> </ul> </li> </ul> |

|  |                                                                                                                                                                                                                                                                                                                                     |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>o The downloadable media can be viewed on different devices, including television and portable devices.</li> <li>o Podcasts allow users to download media for offline access, with the added benefit of subscription, which results in new media files downloading automatically.</li> </ul> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

#### c. Data entry and online service form

##### Iraq e-Government Portal: One-Stop Shop for Government Services

The Iraq e-Government Portal was created to provide citizens and business users with a centralized, consistent, speedy and efficient source of information on government services. Ultimately the portal will be a "one stop shop" for all information about services offered by public sector organizations in Iraq. The portal currently provides all the information needed to obtain any service, including: procedures, location of service provision, fees, average time of completion, service summary and guidelines. In the next phase, the Portal will evolve to offer transactional support for a wide set of e-services.

If you have created a new online service, contact the Iraq e-Government Portal to have your service linked from the portal.

- In order to interact with web site, users require to fill a data entry or service form, below is the guidelines notes for data entry and online service form requirements:
- Distinguish clearly and consistently between required and optional data entry fields.
- Ensure that a pushbutton's label clearly indicates its action. The label of a pushbutton should clearly indicate the action that will be applied when the pushbutton is clicked. Common pushbutton labels include 'Update,' 'Go,' 'Submit,' 'Cancel,' 'Enter,' 'Home,' 'Next,' and 'Previous.'
- Ensure that data entry labels are worded consistently, so that the same data item is given the same label if it appears on different pages.
- Display an associated label for each data entry field to help users understand what entries are desired.
- Do not require users to enter the same information more than once.
- Ensure that labels are close enough to their associated data entry fields so that users will recognize the label as describing the data entry field.
- Create data entry fields that are large enough to show all of the entered data without scrolling.
- Provide radio buttons when users need to choose one response from a list of mutually exclusive options.
- Use widgets (category list) that are familiar to your users, and employ them in their commonly used manner.

- Use the computer to detect errors made by users. - Do not expect that users always will make correct entries. Anticipate possible user errors, and when possible, allocate responsibility to the computer to identify these mistakes and suggest corrections. For example, if a date is entered as 'February 31,' the computer should generate an error message asking for a revised entry. Design the site's search engine (and other places where users enter data) to accommodate common misspellings and certain other errors.
- Partition long data items into shorter sections for both data entry and data display.
- Design data entry transactions so that users can stay with one entry method as long as possible.
- Do not have users shift back and forth between data entry methods. Requiring users to make numerous shifts from keyboard to mouse to keyboard can substantially slow their entry speed.
- Use location and highlighting to prioritize pushbuttons. One study reported that designers should place the button most likely to be clicked on the left side of a two-button set of buttons. This button arrangement allows the user to read the first button label, and since it is the most likely selection, click on that button immediately. Some users look at the left and then right button before making a selection, preferring to be fully informed before submitting a response.
- Use a check box control to allow users to select one or more items from a list of possible choices.
- When using data entry fields, specify the desired measurement units with the field labels rather than requiring users to enter them.
- When using open lists, show as many options as possible. Do not limit viewable list box options.
- Display default values whenever a likely default choice can be defined.
- Place (automatically) a blinking cursor at the beginning of the first data entry field when a data entry form is displayed on a page. Users should not be required to move the mouse pointer to the first data entry field and click on the mouse button to activate the field. Designers should consider, however, that programming this automatic cursor placement might negatively impact the performance of screen reader software.
- Ensure that double-clicking on a link will not cause undesirable or confusing results.
- Use open lists rather than drop-down lists to select one from many.
- Use at least two radio buttons together. If users can choose not to activate any of the radio button choices, provide a choice labeled 'None.'
- Provide auto-tabbing functionality for frequent users with advanced Web interaction skills
- Design data entry transactions to minimize use of the Shift key.
- Ensure saving progress. If the average time to complete a form is more than you can reasonably expect your users to spend in a single session, then you will need to provide a way for them to save their progress. Saving progress does not necessarily mean you require user accounts, logins, e-mail validation etc. For simpler transactions that do not store personal information you might be able to store the data in the URL itself. The user then simply has to bookmark that URL.

#### d. Guidelines for Different Content Types

In addition to the essential elements on a web page (i.e. title, body text with headings, call to action, name of owner and date of creation), each content type should have the following minimum content:

|                             |                                                                                                                                                                                                                                                                                                                                                                                                        |
|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service Description         | <ul style="list-style-type: none"><li>• For each service include:<ul style="list-style-type: none"><li>○ Title of service</li><li>○ Brief description of service</li><li>○ Detailed procedures</li><li>○ Organizations responsible for this service</li><li>○ Link to relevant forms or to online service page</li><li>○ Time and fees required to obtain the service</li></ul></li></ul>              |
| Projects and Tender Notices | <ul style="list-style-type: none"><li>• For each project/tender notice include:<ul style="list-style-type: none"><li>○ Title of project/tender</li><li>○ Brief description about the project/tender</li><li>○ End date</li><li>○ Status / Results (e.g. project status, bidding results)</li><li>○ Link to relevant documents (e.g. project proposal and reports, tender document)</li></ul></li></ul> |
| News                        | <ul style="list-style-type: none"><li>• News category</li><li>• Title</li><li>• News body</li><li>• dates</li><li>• Images</li></ul>                                                                                                                                                                                                                                                                   |
| Events                      | <ul style="list-style-type: none"><li>• Event name</li><li>• Event type</li><li>• Start and end dates, time</li><li>• Location</li><li>• Briefs description</li><li>• Objectives</li><li>• Participants profile</li><li>• Link to event page if applicable</li><li>• Contact information</li></ul>                                                                                                     |
| Complaints/Feedback         | <ul style="list-style-type: none"><li>• The name and e-mail address of the person</li><li>• Type of complaint/feedback</li><li>• Description of the complaint/feedback</li><li>• After submission of complaint/feedback, acknowledge receipt and provide expected response time</li></ul>                                                                                                              |
| Job Announcements           | <ul style="list-style-type: none"><li>• Title of job</li><li>• Brief description of job</li></ul>                                                                                                                                                                                                                                                                                                      |

|                     |                                                                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                     | <ul style="list-style-type: none"> <li>• Application deadline</li> <li>• Application procedures (where to submit application, who to contact for further information, etc.)</li> <li>• Link to full job description</li> </ul> |
| Contact Information | <ul style="list-style-type: none"> <li>• Address</li> <li>• Telephone</li> <li>• Fax</li> <li>• e-Mail</li> <li>• Map</li> </ul>                                                                                               |
| Search Results Page | <ul style="list-style-type: none"> <li>• Title</li> <li>• Brief description</li> <li>• Content owner</li> <li>• Date of creation/update</li> <li>• Optional: tags</li> </ul>                                                   |

## 2.6 Writing Process

Information on planning a page, evaluating your approach while you're writing, and reviewing your draft.

Step1 - Before writing the page:

- Determine the audience of the page. Who will use the information you want to provide?
- Determine the objective of the page.
  - What message should the page convey?
  - What does your audience want to accomplish when they visit your page? You may want to make a list of the "top tasks" and ensure that the page allows each task to be completed.
- Determine the scope of the content.
  - Define what the page will and will not cover. New content should fulfill a need on the ministry. Do not duplicate content that exists elsewhere. A simple search can help you find similar content on the portal.
  - Leverage existing website content through links, when possible. Write only the content needed by your audience and link to related content already on the portal.

Step2- While writing

- The intro statement should provide the context – the who, what, where, when, why, and how about the topic.
- Refer to your original objective and plan for the page.
- Refer to the portal Style.
- Refer to the Content writing guidelines in the above section.
- Include the primary theme of a paragraph, and the scope of what it covers, in the first sentence of each paragraph.

- Optimize reading comprehension, minimize the number of words in sentences, and the number of sentences in paragraphs. To enhance the readability of prose text, a sentence should not contain more than twenty words. A paragraph should not contain more than six sentences.
- Use active voice. Users benefit from simple, direct language. Sentences in active voice are typically more concise than sentences in passive voice. Strong verbs help the user know who is acting and what is being acted upon. In one study, people who had to interpret federal regulation language spontaneously translated passive sentences into active sentences in order to form an understanding of the passages.
- Write instructions in affirmative statements rather than negative statements. When giving instructions, strive to tell users what to do (see a dentist if you have a toothache), rather than what to avoid doing (avoid skipping your dentist appointment if you have a toothache). If the likelihood of making a wrong step is high or the consequences are dire, negative voice may be clearer to the user.

### Step 3- After writing

- Does the page meet the objective?
- Does the page meet the needs of your audience?
- If you were an outside visitor, could you easily complete your "top tasks" using the content and/or links on this page?

## 2.7 Hosting and Server Architecture

### Ø What It Is

Hosting is the process of setting up one or more servers on which the files that compose your website can be stored and made available to the public via the Internet.

### Ø Why It's important

This is so that others will be able to access your website online when you launch it.

### Ø How to Implement

- a. Decide whether to do your hosting in-house or outsource

When considering hosting solutions, you have two choices:

- In-house: Buy (or rent) a server yourself, and run it within your organization.
- Outsource: Host your website with a hosting provider. It is like "renting" hard disk space on their server and Internet connections from them.

## Pros and Cons for In-house and Outsource Hosting

To decide the options for hosting, consider the pros and cons.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Advantages of the In-house Approach</b><br><br>Full control over the server technology you use, enabling you to modify it according to your needs, also at short notice <ul style="list-style-type: none"><li>You have full control over:<ul style="list-style-type: none"><li>Access to the website</li><li>Choice of hardware, including the ease and expandability of upgrades</li><li>Operating environment, software and systems that run on the web server</li><li>Web storage space and performance</li></ul></li></ul> | <b>Disadvantages of the In-house Approach</b> <ul style="list-style-type: none"><li>Pay up-front cost to purchase web server hardware, associated software and high-speed Internet connectivity</li><li>Full-time technical staff required including:<ul style="list-style-type: none"><li>Web and App Server Administrators for design, implementation and maintenance of web server</li><li>Network Administrators for design, implementation and maintenance of network</li><li>Web Security Specialist for employing tools and techniques to maintain website security</li></ul></li><li>Resources required for providing 24/7 support for the website to ensure its availability for users</li></ul> |
| <b>Advantages of Outsourcing</b> <ul style="list-style-type: none"><li>No need to invest in web server system</li><li>Reduced operational and recruitment costs</li><li>As hosting is core business for outsourced agency, likely to have specialized skills and equipment for hosting</li><li>Likely to keep up-to-date with the latest innovation and developments in web hosting</li></ul>                                                                                                                                     | <b>Disadvantages of Outsourcing</b> <ul style="list-style-type: none"><li>Risk of exposing confidential data</li><li>Risk in the availability and security of your website</li><li>Risk of poor technical support</li><li>In-house staff required to monitor and liaise with hosting provider</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                   |

## Requirements and Capabilities for Hosting

The following are the requirements and capabilities for hosting. Assess whether you have the financial and human resources to establish a hosting environment and also maintain it in-house, or whether it is more cost-effective to outsource.

- Hardware: At least 2 host computers based on the requirements of your disk space and bandwidth, and operating system – 1 for the actual hosting of the website and one as back-up in case the main host computer fails.

#### *Disk Space and Bandwidth*

- o Take a look at the size of website and estimate the number of visitors you will get in order to assess the disk space and bandwidth required (e.g. average page size of 50 KB X 2,000 page views per day = 3 GB per month)
- o If your site will feature a lot of pages, graphics and multimedia and get a lot of traffic, you are going to need large disk space (2,000-5,000MB) and high bandwidth (50-75GB).
- o If your site is going to be simple and not generate a huge amount of traffic, smaller amounts of disk space (100-500MB) and bandwidth (5-10GB) should be sufficient.
- o Include storage space for e-mails, website backup and website archiving
- o Make sure you allocate at least double your initial web space requirement to allow for future growth.

#### *Operating System*

- o Two main types of operating system platforms on which you may host your web site, namely: UNIX/Linux and Windows. The language which your website is programmed in is what primarily dictates the type of operating system you need.

- Software

A web server operates at least two broad layers of software:

- o Core services that allow it to function as a web server (e.g. Apache, Microsoft IIS) and which provide key functionality (programming languages such as Perl, PHP, ASP, JSP); and
- o A software/application layer (e.g. databases, content management systems, customer relationship management software).
- o Licensing costs for software.

- High-speed and reliable Internet connection: You must have the host computer connected to the Internet.
- Firewall: For first-line of security
- Backup power: If you would like your web server to be accessible during power outages look into getting an Uninterruptible Power Supply (UPS) unit to plug your host computer, network router, and Internet modem into.
- Server room allocated with air-conditioning to maintain a stable temperature and humidity, and fire protection

## Human Resources

You will need to have the following roles to manage the hosting environment and ensure reliability, availability and security of the website:

- Web and App Server Administrators for design, implementation and maintenance of web server.
- Network Administrators for design, implementation and maintenance of network.
- Web Security Specialist for employing tools and techniques to maintain website security.
- Resources required for providing 24/7 support for the website to ensure that your website is always, or nearly always online.

### b. Outsource Hosting

Generally, if your website is relatively simple and you only have limited resources, it may be preferable to outsource hosting.

If the decision is to outsource hosting, how can you identify the hosting provider that is right for you?

See section on "Contracts for Outsourcing" in *Part 1: Planning*.

The basic steps are:

- Development of specifications and request for proposals
- Receipt, evaluation and selection of the winning proposal
- Negotiation with the selected hosting provider
- Development and issuance of contract to the hosting provider

Do collect references: Ask your peers in other government organizations that have outsourced their hosting and ask about the reliability of their hosting providers.

Assess:

- Track record of their reliability and availability of website hosting and connectivity: Good web hosting providers offer availability rates of 98-99.5 per cent.
- Infrastructure of hosting provider: Are they prepared to continue business for hours or days at a time if a power outage occurs?
- Security arrangements: Do they have firewalls, daily backups and user authentication?
- Safety arrangements: How safe is their physical hosting location to natural disaster and hostile action and what is their contingency plan in case of such events?
- Technical staff qualifications
- Customer service: How many staff members do they have? Is their staff large enough to provide 24/7 support? What response times do they promise?

- Number of e-mail accounts provided and whether it meets your organization's needs.
- Compatibility with the type of operating systems that are supported
- Cost of hosting plans: Think not only about the current needs of your website but also future expansion. Switching to a new web hosting provider is a major hassle so look for one that offers scalable plans. Low prices are always great, but if the low price comes with limits on space or bandwidth, you want to make sure the deal is really worth it.

#### c. Contract with Hosting Provider

Once you have selected your hosting provider, a service level agreement (SLA) needs to be negotiated, drawn up and signed by your organization and the hosting provider.

See section on "Contracts for Outsourcing" in part 1 for general guidelines on developing service level agreements.

The agreement should clearly include the following details:

- Roles and Responsibilities
  - o In establishing an SLA, ensure that the lines of responsibility are clear. Confusion and disagreement over who is responsible for what aspect can be a source of major delays in restoring services.
- Ensure that the SLA Covers all the Server, Software and Application Aspects
  - o While server uptime is a key factor in service availability; the online service will also be unavailable if the software and applications on which it runs fail, even if the server itself continues to operate normally.
  - o The hosting provider is often only responsible for the physical hardware. Maintenance of software and applications is usually undertaken by different parties, but in some instances the hosting provider may be contracted to manage some or all of the core web services if appropriate.
  - o Items in the application layer will normally be supported by your organization, or by the creator/vendor of a specific commercial software product, or by specialist third parties.
  - o Out dated software and applications can seriously affect the availability and performance of the online service, so the SLA should ensure that each supplier responsible for a specified software or application component proactively identifies and carries out any required patches and updates as scheduled maintenance.
- Reviewing and Updating
  - o Review and update SLA as the website changes and grows, with the roles and responsibilities reviewed and updated to reflect any change to the website, the infrastructure or the addition of new software and applications.
  - o Changes in the manner and level of usage of website must be periodically reviewed to ensure that the original specified capacity has not been exceeded. This could cause the

website to perform slowly, experience time-out errors, become entirely unresponsive or fail.

- **Monitoring and Detection**

The SLA should give details of a monitoring plan which should include:

- o Automated processes to regularly check that the server is physically running should take place at least every 15-30 minutes.
- o Regular tests to determine whether web pages are actually being displayed to users, and the speed with which they are displayed. It is possible for the server to be running but for the website itself to have gone down as a result of software and application problems.
- o Monitor and detection of network traffic to track sudden high demand, or spikes in usage of the website. Provide alerts in the event that increased network capacity is required, or that the usage has become so high that the server itself can no longer function.
- o Allow for traffic levels up to twice the current maximum hourly load (or five times maximum hourly load for critical services) and be reviewed on a regular ongoing basis to ensure that this is still sufficient.
- o Detail who will be alerted in the event of the server or website not responding and what procedures will then be initiated to restore services. For example: the Web Project Manager should be informed within 30 minutes of the initial detection, and service restored within 60 minutes.

- **Data and Backup**

- o The website content and data should be fully backed up on a regular basis. The frequency of backup should ensure that no more than one day's work is lost if the server should permanently fail without possibility of recovery.
- o For a website with only two or three minor changes in a week, the backup may be weekly or even monthly; and for sites with high volume content changes, the backup should be at least every 24 hours.

#### **Data Security**

- o Develop clear and legally binding written agreements on the security of the data, and the type of access to it guaranteed to the hosting provider's employees for maintenance purposes.

- **Contingency Planning**

- o How to address serious problems regarding non-availability of the website for a prolonged period, and what are the backup procedures, e.g. in case the entire server facility fails through loss of network connectivity to building, failure of key facilities such as air cooling, or catastrophic failure due to natural disaster or hostile action.
- o Ensure alternative locations.
- o Ensure that regular backup is stored off-site in another location. Many hosting providers offer transfer of backups via network transmission to their alternate locations.

- o Specify the time expected for website to be brought into operation from the off-site backup. A standard period for this would be 24 to 48 hours.
- o For critical services that enable online application for public sector services (such as passport applications, tax returns, etc.), it would never be acceptable for the user's application data to be lost once the online service has acknowledged receipt.
- Hardware
  - o In the event of server hardware failure, the SLA with the hosting provider should specify how quickly they are expected to physically replace the defective device, and to restore the online service from backup. A standard period for this would be 4 to 6 hours.
  - o If hardware or hosting facility is repeatedly failing, causing website availability targets to not be met, then this should trigger a review of whether the service provision is adequate and acceptable.
- Tracking of Users
 

Your web server software can record information about users to your site, such as number of visits, the number of pages viewed (see section on "Continuous Improvement").

  - o Ask the hosting provider about website analysis services to see if it meets your organization's needs to measure the success of your website. A number of popular software packages are designed to produce easily readable site traffic reports, complete with data graphics and charts to aid in data analysis. As a service to their clients, hosting providers often offer reports from popular site analysis programs like Google Analytics for no additional charge.
  - o If your hosting provider does not offer a good site analysis package, ask whether your organization can have access to the log of your account. There are traffic analysis programs that you can run on your computer if you can gain access to the raw web server log from your hosting provider.
  - o Your organization should archive all site logs for long-term analysis and analyses should be done periodically to better understand users' behaviour on your website and make improvements accordingly.
- Training and knowledge transfer
  - o End user training and user manual
  - o Administration training and user manual
  - o Developer training

#### d. In-house Hosting

If your website is large and complex and/or if it contains confidential, sensitive information you need to keep as safe and secure as possible (e.g. defense or finance), you may want to opt for in-house hosting solutions.

But it can be quite expensive, especially in terms of human resources. In this case you need to ensure you have the necessary human and financial resources to fulfil the requirements above to ensure:

- 24/7 website availability and reliability
- Scalability to cope with unpredictable growth
- Technical support at any time of day and year
- Comprehensive security measures (see Security Guidelines below)

Costs include:

- Hardware and software costs
- Initial set-up costs
- Skilled staff to upgrade, maintain and provide 24/7 technical support
- Security system and tools, including firewall
- Backup power
- Server room

## 2.8 Security Guidelines

### Ø What It Is

At the most basic level, the web can be divided into two principal components: web servers, which are applications that make information available over the Internet, and web browsers, which are used to access and display the information stored on the web servers.

Since web servers are open to public access they can be subjected to attempts by hackers to compromise the server. As a result, it is essential to secure web servers and the network infrastructure that supports them.

### Ø Why It's Important

Hackers can deface websites and steal valuable data from systems. This can result in a loss of trust in government services.

There are basically three overlapping types of risk:<sup>7</sup>

- Bugs or misconfiguration problems in the web server that allow unauthorized remote users to:
  - o Steal confidential documents not intended for their eyes.
  - o Execute commands on the server host machine, allowing them to modify the system.

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<sup>7</sup> <http://www.w3.org/Security/faq/wwwsf1.html>.

- o Gain information about the web server's host machine that will allow them to break into the system.
  - o Launch denial-of-service attacks, rendering the machine temporarily unusable.
- Browser-side risks, including:
  - o Active content that crashes the browser, damages the user's system, breaches the user's privacy, or merely creates an annoyance.
  - o The misuse of personal information knowingly or unknowingly provided by the end-user.
- Interception of network data sent from browser to server or vice versa via network eavesdropping. Eavesdroppers can operate from any point on the pathway between browser and server including:
  - o The network on the browser's side of the connection
  - o The network on the server's side of the connection (including intranets)
  - o The end-user's Internet service provider (ISP)
  - o The server's ISP
  - o Either ISPs' regional access provider

A website security strategy that is a part of the overall organization's information security strategy should be in place that addresses the following aspects:

- Confidentiality – Prevents the disclosure of information to unauthorized individuals or systems. Confidentiality is necessary for maintaining the privacy of the people whose personal information is held in the system.
- Integrity – Maintains and assures the accuracy and consistency of data over its entire lifecycle. This means that data cannot be modified in an unauthorized or undetected manner.
- Availability – For a website to serve its purpose, the information and services must be available when it is needed. High availability systems aim to remain available at all times, preventing service disruptions due to power outages, hardware failures and system upgrades. Ensuring availability also involves preventing denial-of-service attacks, such as a flood of incoming messages to the target system essentially forcing it to shut down.
- Authenticity – Ensures that the data, transactions, communications or documents (electronic or physical) are genuine. Some information security systems incorporate authentication features such as "digital signatures", which give evidence that the message data is genuine and was sent by someone possessing the proper signing key.

## Ø How to Implement

### a. Types of Security Measures

Selecting proper security controls and implementing them will initially help an organization to bring down security risk to acceptable levels. Security control selection should be based on a risk assessment. Controls can vary in nature but fundamentally they are ways of protecting the confidentiality, integrity and availability of information, and ensuring authenticity.

ISO/IEC 27001:2005 has defined 133 controls in different areas, but this is not exhaustive. You can implement additional controls according to requirement of the organization. ISO 27001:2013 (still in draft version) has cut down the number of controls to 113.

### Different Type of Security Controls

Administrative controls consist of approved written policies, procedures, standards and guidelines. Examples of administrative controls include the organization's security policy, password policy, hiring policies and disciplinary policies.

Technical controls use software and data to monitor and control access to information and computing systems. For example: passwords, firewalls, network intrusion detection systems, access control lists, and data encryption are logical controls.

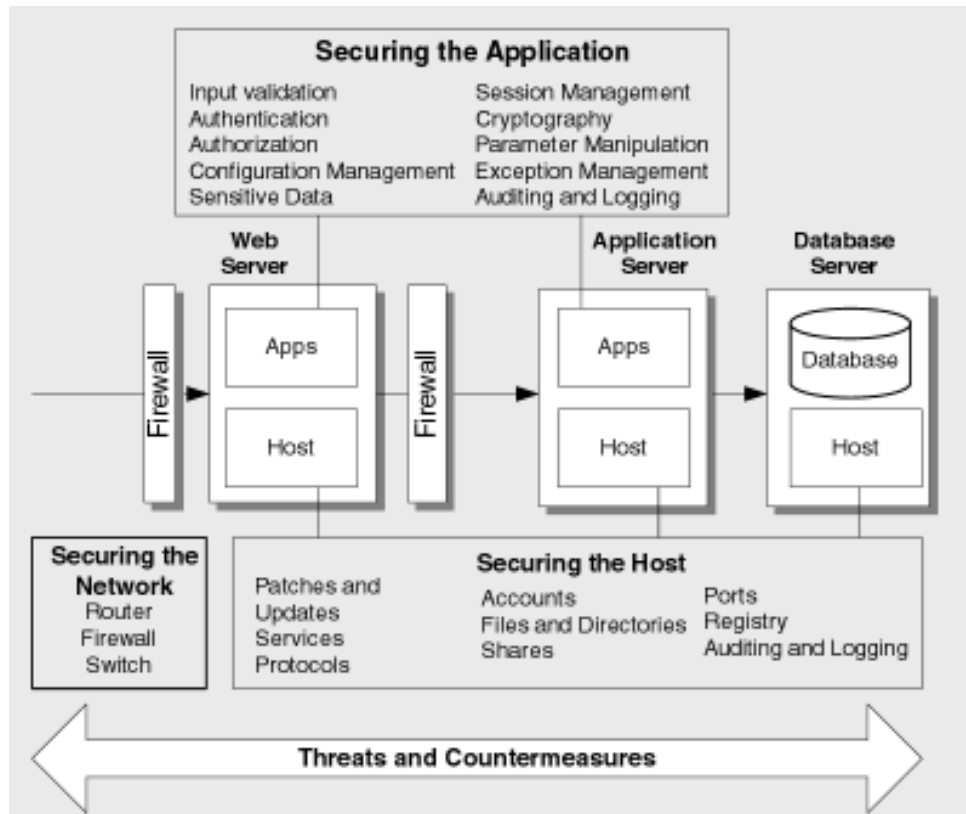
Physical controls monitor and control the environment of the work place and computing facilities. They also monitor and control access to and from such facilities. For example: doors, locks, heating and air conditioning, smoke and fire alarms, fire suppression systems, cameras, barricades, fencing, security guards, cable locks, etc.

Social controls such as awareness raising and training. All employees have to be trained to lock their computer screens when they leave their desks, to use strong password management schemes, to know the methods of social engineering so that they do not end up revealing any confidential information, etc.

Today's security systems have been designed and developed based on a Defense-In-Depth (DID) model that involves the building up, layering on and overlapping of security measures, so that should one defensive measure fail there are other defensive measures in place that continue to provide protection.

#### b. Technical Controls for Network, Host and Application

Technical controls must be applied to three layers—network, host and application. And each of these layers needs to put into place mechanisms for prevention and detection.



Source: <http://msdn.microsoft.com/en-us/library/ff649874.aspx>

#### i. Securing Your Network

The network infrastructure (e.g., firewalls, routers, intrusion detection systems) that supports the web server plays a critical role in the security of the web server. Monitor and conduct regular tests for network vulnerability.

| Component | Description                                                                                                                                                                                                            |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Router    | Routers are your outermost network ring. They channel packets to ports and protocols that your application needs. Common TCP/IP vulnerabilities are blocked at this ring.                                              |
| Firewall  | The firewall blocks those protocols and ports that the application does not use. Additionally, firewalls enforce secure network traffic by providing application-specific filtering to block malicious communications. |
| Switch    | Switches are used to separate network segments. They are frequently overlooked or overtrusted.                                                                                                                         |

#### ii. Securing Your Host

This is your web server, application server, or database server.

Default hardware and software configurations are typically set by manufacturers to emphasize features and functions, and less on security. Therefore, web servers must be configured to reflect their organization's security requirements.

| Category             | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Patches and Updates  | Many top security risks exist because of vulnerabilities that are widely published and well known. When new vulnerabilities are discovered, exploit code is frequently posted on Internet bulletin boards within hours of the first successful attack. Patching and updating your server's software is the first step toward securing the server. If you do not patch and update your server, you are providing more potential opportunities for attackers and malicious code. |
| Services             | The service set is determined by the server role and the applications it hosts. By disabling unnecessary and unused services, you quickly and easily reduce the attack surface area.                                                                                                                                                                                                                                                                                           |
| Protocols            | To reduce the attack surface area and the avenues open to attackers, disable any unnecessary or unused network protocols.                                                                                                                                                                                                                                                                                                                                                      |
| Accounts             | The number of accounts accessible from a server should be restricted to the necessary set of service and user accounts. Additionally, you should enforce appropriate account policies, such as mandating strong passwords.<br>Define a complete web content access matrix that identifies which folders and files within the web server document directory are restricted and which are accessible (and by whom).                                                              |
| Auditing and Logging | Auditing is a vital aid in identifying intruders or attacks in progress. Logging proves particularly useful as forensic information when determining how an intrusion or attack was performed.                                                                                                                                                                                                                                                                                 |

### iii. Securing your Applications

Web application developers are responsible for the look, functionality, performance and security of the web content and web-based applications they create. Threats are increasingly directed at applications instead of the underlying web server software and operating systems. Web application developers must ensure that their code takes security into consideration and that the following security measures are taken:

| Category         | Description                                                                                                                                                                                                                                                                                                                                                                      |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Input Validation | Input validation refers to how your application filters, scrubs or rejects input before additional processing.<br>Perform input validation so that the application's security mechanisms cannot be bypassed when a malicious user tampers with data he or she sends to the application, including HTTP requests, headers, query strings, cookies, form fields and hidden fields. |

|                          |                                                                                                                                                                                                                                                                                                                                                                                                               |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Authentication           | Authentication is the process where an entity proves the identity of another entity, typically through credentials, such as a username and password.                                                                                                                                                                                                                                                          |
| Authorization            | Authorization is how your application provides access controls for resources and operations.                                                                                                                                                                                                                                                                                                                  |
| Configuration Management | What does your application run as? Which databases does it connect to? How is your application administered? How are these settings secured? Configuration management refers to how your application handles these operational issues.                                                                                                                                                                        |
| Sensitive Data           | Sensitive data refers to how your application handles any data that must be protected either in memory, over the wire, or in persistent stores.<br>Inadequate protection can allow data tampering and access to confidential information such as usernames, passwords and credit card numbers.<br>Use user authentication, digital signatures and other cryptographic technologies to protect sensitive data. |
| Session Management       | A session refers to a series of related interactions between a user and your web application. Session management refers to how your application handles and protects these interactions.                                                                                                                                                                                                                      |
| Cryptography             | How are you keeping secrets (confidentiality)? How are you tamper-proofing your data or libraries (integrity)? Cryptography refers to how your application enforces confidentiality and integrity.                                                                                                                                                                                                            |
| Exception Management     | When a method call in your application fails, what does your application do? How much does it reveal? Does it pass valuable exception information back to the caller?<br>Process errors in a secure manner so as not to lead to exposure of sensitive information.                                                                                                                                            |
| Auditing and Logging     | Maintain own application-specific logs—Who did what and when? In many instances, web server logging is not sufficient to track what a user does at the application level, requiring the application to maintain its own logs. Logging details can lead to knowledge about possible intrusions and an ability to verify a user's actions (both legitimate and malicious).                                      |
| Installation             | Install web content on a dedicated hard drive or logical partition from the operating system and web server application. Install or enable only necessary services.                                                                                                                                                                                                                                           |

### c. Users' Authentication and Access Control

Access to protected information must be restricted to people who are authorized to access the information. The computer programs, and in many cases the computers that process the information, must also be authorized. This requires that mechanisms be in place to control the access to protected information.

The sophistication of the access control mechanisms should be in parity with the value of the information being protected—the more sensitive or valuable the information the stronger the control mechanisms need to be. The foundation on which access control mechanisms are built start with identification and authentication.

The username is the most common form of identification on computer systems today and the password is the most common form of authentication. Strong authentication requires providing more than one type of authentication information.

To ensure the appropriate user authentication is in place, take the following steps:

- Remove or Disable Unnecessary Default Accounts and Groups
  - o Remove or disable unnecessary accounts to eliminate their use by attackers, including guest accounts on computers containing sensitive information.
  - o For default accounts that need to be retained, change the names (where possible and particularly for administrator or root level accounts) and passwords. Default account names and passwords are commonly known in the attacker community.
- Create the User Groups
  - o Assign users to the appropriate groups. Then assign rights to the groups. This approach is preferable to assigning rights to individual users, which becomes unwieldy with large numbers of users.
- Create the User Accounts
  - o Create only the necessary accounts.
  - o Permit the use of shared accounts only when no viable alternatives exist.
- Check the Organization's Password Policy

Set account passwords appropriately. This policy should address the following:

  - o Length—a minimum length for passwords. Specify a minimum length of at least eight characters.
  - o Complexity—the mix of characters required. Require passwords to contain both uppercase and lowercase letters and at least one non-alphabetic character, and to not be a “dictionary” word.
  - o Aging—how long a password may remain unchanged. Require users to change their passwords periodically.
  - o Administrator or root level passwords should be changed every 30 to 120 days.
  - o The period for user-level passwords should be determined by the enforced length and complexity of the password combined with the sensitivity of the information protected.
  - o Reuse—whether a password may be reused. Some users try to defeat a password aging requirement by changing the password to one they have used previously. Authority—who is allowed to change or reset passwords and what sort of proof is required before initiating any changes.

- o Password Security—how passwords should be secured, such as not storing passwords unencrypted on the mail server, and requiring administrators to use different passwords for their e-mail administration accounts than their other administration accounts.
- Configure Computers to Prevent Password Guessing
 

It is relatively easy for an unauthorized user to try to gain access to a computer by using automated software tools that attempt all passwords.

  - o Increase the period between login attempts with each unsuccessful attempt.
  - o Or deny login after a limited number of failed attempts (e.g., three).
  - o Typically, the account is “locked out” for a period of time (such as 30 minutes) or until a user with appropriate authority reactivates it.
  - o The choice to deny login requires the web server administrator to make a decision that balances security and convenience.
  - o Implementing this recommendation can help prevent some kinds of attacks, but it can also allow an attacker to use failed login attempts to prevent user access, resulting in a DoS condition.
  - o Failed network login attempts should not prevent an authorized user or administrator from logging in at the console.
- Install and Configure Other Security Mechanisms to Strengthen Authentication
 

If the information on the web server requires it, consider using other authentication mechanisms such as biometrics, smart cards, client/server certificates, or one-time password systems. They can be more expensive and difficult to implement, but they may be justified in some circumstances.

#### d. Summary of Core Security Principles

| Principle               | Concepts                                                                                                                                                                                                                                                                                                                                                 |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Compartmentalize        | Reduce the surface area of attack. Ask yourself how you will contain a problem. If an attacker takes over your application, what resources can he or she access? Can an attacker access network resources? How are you restricting potential damage? Firewalls, least privileged accounts, and least privileged code are examples of compartmentalizing. |
| Use least privilege     | By running processes using accounts with minimal privileges and access rights, you significantly reduce the capabilities of an attacker if the attacker manages to compromise security and run code.                                                                                                                                                     |
| Apply defense in depth  | Use multiple gatekeepers to keep attackers at bay. Defense in depth means you do not rely on a single layer of security, or you consider that one of your layers may be bypassed or compromised.                                                                                                                                                         |
| Do not trust user input | Your application's user input is the attacker's primary weapon when targeting your application. Assume all input is malicious until proven                                                                                                                                                                                                               |

|                            |                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                            | otherwise, and apply a defense in depth strategy to input validation, taking particular precautions to make sure that input is validated whenever a trust boundary in your application is crossed.                                                                                                                          |
| Check at the gate          | Authenticate and authorize callers early — at the first gate.                                                                                                                                                                                                                                                               |
| Fail securely              | If an application fails, do not leave sensitive data accessible. Return friendly errors to end users that do not expose internal system details. Do not include details that may help an attacker exploit vulnerabilities in your application.                                                                              |
| Secure the weakest link    | Is there a vulnerability at the network layer that an attacker can exploit? What about the host? Is your application secure? Any weak link in the chain is an opportunity for breached security.                                                                                                                            |
| Create defaults            | secure<br>Is the default account set up with least privilege? Is the default account disabled by default and then explicitly enabled when required? Does the configuration use a password in plaintext? When an error occurs, does sensitive information leak back to the client to be used potentially against the system? |
| Reduce your attack surface | If you do not use it, remove it or disable it. Reduce the surface area of attack by disabling or removing unused services, protocols, and functionality. Does your server need all those services and ports? Does your application need all those features?                                                                 |

## V- Part 3: Implementation

Websites are typically designed, created and tested in a development environment on a web server that is accessible only to the programmers working on the site. Once the website is ready to be released, it is moved to a production environment on the server where the website can be accessed by anyone on the Internet.

“Implementation” is this transition stage prior to the launch of the website and just after its launch. At this stage, the website is tested in the development environment, after which the website is being transferred to the production environment where it goes live.

Promotion or marketing for the website is another key activity at this stage to raise awareness about the information and services available on the website. And just after the launch of the website, search engine optimization techniques should be applied to ensure that users are able to find your website in search engines.

This part covers the following:

- Deployment and migration
- Testing
- Promotion
- Search engine optimization

## 3.1 Deployment and Migration

### Ø What It Is

It is the process of transferring all the files that make up your website from a local environment to a web server, followed by site testing and then taking the website live.

For those with an existing website, you will need to migrate all or part of your website to the new web server.

### Ø Why It's Important

To allow your website to be accessible via the Internet.

### Ø How to Implement

You will need to transfer the entire website to the server. You can do this with either the tools that come with your hosting service or with file transfer protocol (FTP) clients.

#### a- Deployment of a New Website

It is good practice to transfer the file from your local environment to a development environment on the web server, rather than directly to a production environment.

In the development environment, the website design and functionalities can be tested, and bugs can be fixed by the developer.

The development environment should mimic the real production environment as closely as possible. Ensure that both the development and production environments have the same configuration file settings, operating system patches, and updates and upgrades. The smallest deviations can have profoundly negative effects on a deployment.

#### Setting up a Development Environment

A recommended practice is to set up a subdomain URL prior to officially deploying the site. Something like “dev.domainname.com” which will eventually be on “[www.domainname.com](http://www.domainname.com)”.

By doing this, you can set up the website in the same physical location that it will live. You want to be as accurate as possible here so that you can do your final tests as if the site was truly deployed.

You can set all folder permissions and other settings, and then run tests and benchmarks to see how the site performs on the server.

Once various tests are conducted and all known bugs fixed, the website files can be transferred to the production environment. These files include database information, markup files, code files, style sheets, website content, audio and video files, etc. In website configuration files, the developer will need to adjust local paths to production paths in order to reference media.

#### b- Deployment of a Revamped Website: Content Freeze or Dual Maintenance

In case that you have an existing website that you wish to migrate to a new CMS, you need to minimize the impact of a content freeze where you have to stop any updates on the website so that you will not miss any content that needs to be migrated when you do the actual migration.

If your website is complex where content migration may take several weeks or months, you may have to do dual maintenance of both the old and new website. In a dual maintenance, you will need to make identical content updates on both the old and new websites to keep content in sync, so you do not lose any updates.

- Step 1: Conduct an ROT (Redundant, Outdated, and Trivial) analysis

BEFORE the migration process, analyse what content can be archived and not migrated to the new CMS. This will reduce the time of content freeze.

Redundant content is characterized by repeating the same idea in multiple locations.

- Duplicate pages/documents
- Multiple pages on the same topic, written for the same/similar audience

Outdated content consists of materials that are no longer in use, or are out-of-date.

- Pages that refer to something "new" that is now well established.
- Pages that describe projects that no longer exist
- Pages that refer to events that have concluded and have no historical value (e.g. conference registration pages)

Trivial content is of little importance or value, and is considered insignificant to the overall scheme or purpose of your website.

- Pages that are essentially about nothing at all
- Default pages and index pages without "real" information

Your migration will be simpler if you do not make any content changes as you are actually migrating content to the new CMS.

- Step 2: Identify the best migration model

The size and complexity of your website will determine whether or not you can automate certain migration tasks.

| Migration Models    | Descriptions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Manual Migration    | <ul style="list-style-type: none"><li>• In a manual migration, content is manually copied and pasted from the old system to the new. The amount of time needed for a manual migration depends on the complexity of the website and the number of people doing the work.</li><li>• If you are moving from static HTML to a structured content model, you may not be able to simply cut and paste all your pages from the old system to the new. Depending on the type of content, you may need to paste the content in pieces, so you can save it as structured content.</li><li>• If the content is already tagged with metadata, you may be able to automate the migration of metadata. If not, you should tag each page as you move the content into the new CMS. It is much faster to tag as you go, than to go back and tag everything afterwards.</li></ul> |
| Automated Migration | <ul style="list-style-type: none"><li>• An automated migration uses software tools to move content from the old website into the new CMS. It usually requires a lot of time upfront to develop migration scripts, but significantly speeds up the actual content migration process, and can reduce the length of your content freeze.</li><li>• Computer scripts can be written to move entire pages, or move content by fields (such as title, body, metadata and images). Your scripts need to map content properly into the correct fields in your new CMS.</li><li>• While scripts can make the migration process move quicker, the end result still needs to be reviewed by the web team to make sure it worked properly.</li></ul>                                                                                                                         |
| Mixed Migration     | <ul style="list-style-type: none"><li>• Use a mix of manual work and automated tools if you are only able to automate parts of your migration, and have to manually move the rest of your content into the new system.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

- Step 3: Develop schedule for migration

Once you have identified your migration model, decide on a schedule for migration. Migration is best done during a weekend or during times when the office is least busy.

- Step 4: Back up and test

To avoid loss of content in the migration process you should:

- Back up all the files before the migration and make sure that it can be restored if needed
- Test your migration process (especially if you have automated anything) in a sandbox or testbed.
- Create redirects as needed

If you have changed a lot of URLs during your migration, you may need to create redirects to help users find your content in case they have bookmarked them.

- Keep your stakeholders informed about the migration process
- It will be important to explain why the website is being migrated and what are the benefits of doing so.
- Explain briefly the migration process and set expectations that the migration process may not be seamless.
- Let content owners know in advance when to expect the content freeze, so they can make important website updates beforehand.
- Once you know how long the freeze will last, give content owners an estimate that includes a few extra days, in case you run into unexpected delays. It's better to complete the migration early, than to make people wait longer than they had planned.

Once the revamped website is live in the production environment, do a series of tests to ensure that changes appear and function as intended.

## 3.2 Testing

### Ø What It Is

Website testing is a process for evaluating the conformance of a website to an agreed set of guidelines.

### Ø Why It's important

The purpose of testing is to ensure that your website is capable of operating to a minimum acceptable standard, in order to meet the goals that have been set for it.

### Ø How to Implement

Once you have uploaded the website to the development environment of the web server, you will need to test it.

a. Who Will Test?

|                                                    |                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Web Project Manager and Web Team                   | The web team should take some time to visit the entire website to ensure that it is working as intended.                                                                                                                                                                                                                                                         |
| Web Content Manager and others in the Content Team | Conducts a final proofreading of all content, and focus on ensuring that all content are displayed well on target browsers, operating systems and devices, and that all links are functional.                                                                                                                                                                    |
| Web Designer/Developer                             | Focuses on ensuring the layout and look and feel display well on target browsers, operating systems and devices.                                                                                                                                                                                                                                                 |
| Technical Architect and IT Team                    | Focuses on resolving any problems related to the technical architecture.                                                                                                                                                                                                                                                                                         |
| Others in the organization                         | If possible, ask colleagues in your organization to check the website as they may find details that need to be changed, or any other errors and mistakes. This is because after working intensively and for a long period on the website, it is easy to lose sight of the details, and you may end up overlooking some important functionalities of the website. |

b. What Will You Test?

Below is a list of test method and suggested tools to help conduct the tests prior to the launch of your website.

| Test Method                       | Description                                                           | Suggested Tools                     |
|-----------------------------------|-----------------------------------------------------------------------|-------------------------------------|
| <i>Front End – User Interface</i> |                                                                       |                                     |
| Spelling and Grammar              | Check for spelling and grammatical errors                             | Online spelling and grammar checker |
| Design                            | Ensure all pages conform to the website's preferred layout and design |                                     |

|                                          |                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Hyperlink                                | Check that all links work                                                                                                                                                                                                                                                                                                                                                 | Link checker:<br><a href="http://validator.w3.org/checklink">http://validator.w3.org/checklink</a>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Browser and Operating System and Devices | <p>Check that the website displays correctly across target browsers, operating systems and devices. For example, check that:</p> <ul style="list-style-type: none"> <li>• Text does not disappear or get cut off.</li> <li>• Text, images, and other content does not overlap.</li> <li>• All buttons, form fields, and other controls are visible and usable.</li> </ul> | <p>HTML and CSS for tables, forms, positioning and alignment sometimes work slightly differently in each brand or operating system version of web browsers. Check your web logs or use a web analytics tool to understand what browser brands, browser versions, operating systems and devices are most common among your website users for testing. If you encounter a discrepancy in how your pages render in different browsers, check that you are using valid HTML and CSS code.</p> <p>Also, test website with:<br/>Text browsers like Lynx (<a href="http://lynx.isc.org">http://lynx.isc.org</a>) and<br/>Screen readers like NVDA (<a href="http://www.nvda-project.org">http://www.nvda-project.org</a>)</p> |
| Accessibility                            | Ensures that the website conforms with W3C WCAG's web accessibility standards                                                                                                                                                                                                                                                                                             | <p>See <a href="http://www.w3.org/WAI/eval/Overview.html">http://www.w3.org/WAI/eval/Overview.html</a> for a wide range of software programs and online services that check the website's compliance with W3C recommendations for web accessibility.</p> <p>However, the results from automated checks should not be used to determine conformance levels unless they are operated by experienced evaluators who understand the capabilities and limitations of the tools in order to achieve accurate results.</p>                                                                                                                                                                                                    |
| Usability                                | Ensures that the website conforms to appropriate practice in the area of usability                                                                                                                                                                                                                                                                                        | Usability tests (see section on "Usability Testing" below)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <i>Back-End</i>                          |                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| HTML and CSS Code                        | Check the markup of web documents to ensure that they                                                                                                                                                                                                                                                                                                                     | <p>HTML validation: <a href="http://validator.w3.org">validator.w3.org</a><br/>CSS validation: <a href="http://jigsaw.w3.org/css-validator">jigsaw.w3.org/css-validator</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

|             |                                                                                                                                                                                                                                          |                                                                                                                                                                                                               |
|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Validation  | meet web standards.                                                                                                                                                                                                                      |                                                                                                                                                                                                               |
| Security    | Ensures website operates with minimum risk in a secure environment.                                                                                                                                                                      |                                                                                                                                                                                                               |
| Performance | Tests website performance under "stress", i.e. simulate a situation in which the website receives a large number of requests over a short period, to make sure that the servers can handle the load. Software is required for this test. | Page Speed:<br><a href="http://code.google.com/speed/page-speed/">http://code.google.com/speed/page-speed/</a><br><br>Web Page Test:<br><a href="http://www.webpagetest.org/">http://www.webpagetest.org/</a> |

### c. Usability Testing

Usability testing is one of the best ways to find out what is or is not working on your website, and assess users' ability to complete tasks. In a typical usability test, a user will perform website tasks while the web team and stakeholders watch, listen and take notes.

Usability tests aim to find out about:

- Ease of learning – How fast can a user who has never seen the user interface before learn it sufficiently well to accomplish basic tasks?
- Efficiency of use – Once an experienced user has learned to use the website, how fast can s/he accomplish tasks?
- Memorability – If a user has used the website before, can s/he remember enough to use it effectively the next time or does the user have to learn it again?
- Error frequency and severity – How often do users make errors while using the website, how serious are these errors, and how do users recover from these errors?
- Subjective satisfaction – How much does the user like using the website?

Usability tests can be used during website development to test the prototype, or it can be used before the launch of the website to fine tune the navigation system and content of the website. Usability tests can also be used after the website is launched when changes have been made to your website or for continuous improvement.

To test the usability of your website:

Step 1 – Make a list of actions, or tasks, that your users are likely to want to undertake when they visit your website. These tasks could include:

- Find information on a list of job openings
- Find information on how to start a business
- Apply for a license
- Pay fee for license

Step 2 – Once you have this list, you can ask the users “where would you go to...”

- Stand next to them or behind them while they do this on a computer or on other devices, and take notes.
- Make sure that you do not interfere with what they are doing (e.g. by making suggestions or comments).
- Also make sure that users understand that it is not them who are being tested, but the interface of the site.

By observing the behaviour of users while they try to fulfil different tasks, you will understand whether the interface makes it easy or not for them to do so. For instance, if users are puzzled and do not know where to start, or if they click on links that do not eventually take them to the information requested, it is likely that the navigation system you have planned is not appropriate. Similarly, if users have to click many times to find the information they are looking for: in real life, it is likely that they would give up after a few clicks. If this is the case, you may want to review the way you have designed the navigational system of your site.

You may want to video record the usability test sessions so that you can replay the test sessions to see if there are any observations that you missed. You can also include the video recording as part of your reporting to illustrate specific problems.

Step 3 – Sit down with users after the test and ask them how the system could be improved.

In general, feedback falls into two major categories. Certain tasks can reveal quantitative usability metrics, such as the amount of time or number of clicks it takes to complete a given task. Other tasks can reveal more qualitative data, such as a participant’s perceived ease-of-use for a given web page.

This sample table can be used to record results.

| Task | Completion (Yes/No) | No. of Errors | No. of Clicks | Time to Complete Task (seconds) | Satisfaction based on Scale 1-5 (1=very unsatisfied to 5=very satisfied) |
|------|---------------------|---------------|---------------|---------------------------------|--------------------------------------------------------------------------|
| 1    |                     |               |               |                                 |                                                                          |
| 2    |                     |               |               |                                 |                                                                          |
| 3    |                     |               |               |                                 |                                                                          |

|   |  |  |  |  |  |
|---|--|--|--|--|--|
| 4 |  |  |  |  |  |
| 5 |  |  |  |  |  |
| 6 |  |  |  |  |  |

Step 4 – The most important part of a usability test is turning the feedback into action. Typically, this means analyzing the usability test results and putting findings into a report or other format that is easy for the key stakeholders to understand and act upon. In addition, you will want to work with key stakeholders to ensure that the results are clear and that follow-up plans are made.

#### How Many Test Users?

- You do not need a very large number of test users: often, testing with just 3-5 users will already provide you with enough information.
- It is preferable to test many times (after each refinement), with a small number of users.
- Try to select users from your different target audience groups and users with different levels of IT and web literacy and proficiency.
- If you do not have the resources to test the prototype with external users, consider carrying out tests with co-workers in your organization, if this is possible.

### 3.3 Promotion

#### Ø What It Is

Public sector websites are usually intended for providing information, providing online services and allowing users to accomplish transactions online. These information and services will benefit users if the website can accomplish three things:

**Awareness** – Users must be aware that the information is online and that the service exists. This is why you need to promote your website.

**Findability** – Once users know a service or information is online, they need to be able to find it. This is related to search engine optimization to ensure that users are able to find your website in search engines, and once they are on your website, be able to find the information and service they need. Your internal search tool and navigation system is critical here.

**Usability** – Once users find the information page, the information needs to be relevant to their needs and answers their questions and it needs to be clear and easy to understand. Similarly if users find the service that they are looking for, they need to be able to complete the tasks, smoothly and quickly. The structure and quality of your content plays an important role here.

If your content is of high quality, they will be promoted by your users through word-of-mouth and social media, and people will bookmark web pages and link to your website. That is why it is important not to change the url of your links if possible.

## Ø Why It's Important

You want people to know about your website, find your website and the information and services that they need on your website, and help promote your website by referring it to others.

## Ø How to Implement

This section looks at two main ways to promote your website—online and offline.

Below is a list of options for promoting your website. Based on the budget that you have, decide on the best options and strategy for promotion. A low-budget but constant promotional effort may work better than big "one-off" promotional activities, and it will be also easier to fine tune according to the lessons you learn with experience. Consult the Communications Team for the best channels to reach target audience.

The promotion of your website should not stop after its initial launch.

### a. Online Promotion

- Search Engine Optimization: This is related to submitting your website URL to search engines, adding keyword rich descriptions, tagging your content, and other techniques to improve your ranking in relevant search results on commercial search engines such as Google and Bing. See section on "Search Engine Optimization" below.
- Cross linking: Identify different stakeholders that will find your website relevant to their needs. Proactively reach out to them. Suggest they add a link from their website to yours. You may also suggest that they link to other webpages that have relevant content. It is recommended that you e-mail these links to the different stakeholders and make sure that the links are clickable in the e-mail.

As a minimum, you should make sure that your website is listed on the Iraq e-Government Portal (<http://www.egov.gov.iq/>).

Some search engines use the number of links from other websites to yours as a criterion for the evaluation of the website's popularity. The more cross-linking you can do, the higher chance you have of being on top in search engine listings, therefore improving your visibility.

- E-mail signature: Ensure that all your staff's e-mail signature includes the website homepage
- E-Newsletter: If you have a list of e-mail contacts to which you think it would be appropriate to send information about your website, send them an email as people who use e-mail are likely to have access to the web.

In order to fully take advantage of the promotional value of e-mail, it would be useful to compile mailing lists, made of the e-mail addresses of users to your website. You can send these users newsletter by e-mail that regularly provides them with updates about the website, including any new information, services or features.

There are two ways to compile a mailing list –

1. By asking users to register for specific services or
2. By logging their e-mail address when they make enquiries online.

If you choose to use e-mail as a promotional medium, you should make sure that users are informed that their e-mail address may be used for this purpose, and that they are always given the possibility to "unsubscribe" from these mailings. Sending unsolicited mail will not be good for the reputation of your organization.

- Responding to requests online: For staff responsible for citizen support and responding to queries, provide relevant links to the website where the information/service can be found if the information/service requested is available on the website.
- Use of social media: Social media networks such as Facebook and Twitter can be used to promote your website, e.g. Facebook Ads. Your organization may decide to set up a social media account (see *Part 6: Use of Social Media*).

#### b. Offline Promotion

- Consult with your Communications Team on any existing channels that can be used to promote the website.
- Develop a press release and organize a press conference.
- Ensure relevant links are included in all of your organization's press releases, public service announcements, reports and other communications.
- Ensure the URL of the homepage is included in all promotional and collateral materials (e.g. brochures, posters, banners, business cards, stationery, bills and statements)
- Develop a promotional brochure or card about your new website that can be included in your organization's postal mailings (e.g. in reply to a query or attached to a bill) to make recipients aware that information or services are also available on your website. The brochure can also be placed at all your service counters and offices.

- Provide incentives for completing transactions online, e.g. reduced fees for applying for licenses online or shorter processing time.
- If you have the budget for it, consider regular or one-off public awareness campaigns through various media (newspaper, radio, television, billboards) where the benefits of the website are illustrated in direct and effective ways.
- Never underestimate the power of word-of-mouth as a promotional tool, which is connected to the quality of the information and service you provide. If users are satisfied with your website, it is likely that they will make other potential users aware of its existence, and personal recommendations from trusted individuals tend to rank higher in people's considerations than public promotional or advertising campaigns.

### 3.4 Search Engine Optimization

#### Ø What It Is

Search Engine Optimization (SEO) is the active practice of improving aspects of your website so that commercial search engines (such as Google and Bing) can find and display your web pages in the results when they are relevant to a searcher's query.

Users expect to find the most relevant results at the top of the search engine's results page. So when users conducts a search related to information or services that your website offers, you would want the search results to list your website at or near the top of the page. This increases the chance that users will find your website.

#### Ø Why It's Important

Following Search Engine Optimization best practices will ensure your content is found by searchers on commercial search engines such as Google and Bing, and also help make it more findable by searchers on your organization's website.

#### Ø How to Implement

##### a. Submit URL and Sitemap to Bing and Google Search Engines

Once the website is launched:

- Submit the URL to Google and Bing search engines at:
  - o Bing Webmaster Tools (<http://www.bing.com/toolbox/webmaster>)
  - o Google Webmaster Tools (<http://www.google.com/webmasters>)
- Submit your sitemap as well to the Bing and Google Webmaster Tools.

## b. Content Guidelines for Search Engine Optimization

If you follow the guidelines for developing content (in part 2), your content will be optimized for search.

Here are some general tips:

- Think carefully of the key terms that your audience will use to search for your website. Use those terms to guide the construction of your website content and taxonomy.

(see *Part 5: Continuous Improvement* to find out how to use results from web analytics and search engine webmaster tools to find out about users' search behaviour)

- For your homepage, begin the title tag with your organization's name, followed by a brief description about the website.
- All web pages should have a title that matches the content of the page.
- All web pages should have a short description summarizing the content.
- The title and short description are what appears on search results. Make sure the key terms that people use to search for your content are in your title and in the first few words of the short description.
- Use a "keyword" meta-tag to list keywords for each page of your website using your taxonomy. Use distinct keywords that relate to each specific page on the website. Do not use one broad set of keywords for the entire website.
- Use ALT text for graphics. ALT text improves the text content of your page for search purposes. It also makes your pages more accessible to text-only browsers and visually impaired website users.

## c. Technical Guidelines for Search Engine Optimization

- Ensure your web server supports the If-Modified-Since HTTP header. This feature allows your web server to tell search engines whether your content has changed since the search engine last crawled your website. Search engines employ crawlers software that scans the contents of each page it comes across on the websites, and stores the words it contains for reference.
- Make use of the robots.txt file on your web server. This file tells crawlers which directories can or cannot be crawled.

- If you are using a CMS for your website, make sure that the system creates pages and links that search engines can crawl.

#### d. Building Links to your Website

- A search engine knows that a website's content is trusted when other trusted websites link to it. Building links to your website is a key way to boost your site's visibility, particularly when links come from other "authoritative" sites (websites that are respected and offer high value e.g. other government sites, education sites and news sites).
- The Google and Bing Webmaster Tools will be able to give you details about links to your website. Or you can simply type in "link:[www.sitename.gov.iq](http://www.sitename.gov.iq)" into any web search engines.
- Once you have built up a system of links into your website, avoid putting this at risk through unnecessary website structure or domain changes. These can damage ranking in the short term, while the website reputation is rebuilt.
- If you are making large scale changes to the structure of your website, it is advisable to alert key stakeholders ahead of time and ask them to link directly to the new location, in addition to setting up temporary and/or permanent redirects.
- Key pages should have persistent URLs. A persistent URL will point to key content even if the content has moved.
- Use web analytics tools to identify where users are following wrong or out-of-date links from other websites. If you detect that another website is sending users to the wrong place on your website, send the correct URL to the webmaster of that website and ask them to replace the faulty link with the right one.
- Consider providing a "link to this page" function to enable users to easily bookmark your website using social bookmarking tools such as Digg or Delicious.

To find out more about Search Engine Optimization see:

<http://webstyleguide.com/wsg3/5-site-structure/4-search-engine-optimization.HTML>  
<http://www.howto.gov/web-content/search>  
<http://digitalstandards.cabinetoffice.gov.uk/search-engine-optimisation/>

### Ø What It Is

Maintenance of a website can be divided into: (1) technical maintenance, (2) content maintenance, and (3) communication maintenance.

- Technical Maintenance

Maintaining a website means ensuring that it remains usable and accessible at all times, and that it thrives to meet its goals and objectives. All standard public sector websites should aim to be available at least 98% per annum. This involves monitoring the hardware, software/applications and network and ensuring that they are running smoothly. If you have outsourced website hosting, it will also involve supervising the hosting provider.

- Content Maintenance

Maintenance applies not only to the technical aspects of a website, but also to the quality and usability of its contents: the information you publish should be as accurate and up-to-date as possible, and this will require dedicated efforts on the part of your organization. (see section on “Content Management” in *Part 2: Development*)

- Communication Maintenance

It is also important to maintain the public awareness of the website, by promoting it appropriately online and offline. (see section on “Promotion” in *Part 3: Implementation*)

Another aspect of maintenance is managing communication according to your communication plan, and complaint and feedback monitoring.

### Ø Why It's important

This is because your website is one of your communication channels with your target audiences. It is important to maintain your website so that it continues to serve its purpose efficiently and effectively, and meet your target audience needs.

### Ø How to Implement

#### 4.1 Maintenance Plan and Maintenance Responsibilities

For each web page or section of your web page appoint a content coordinator/editor from the relative business unit, who will be responsible for its timeliness and its accuracy, and will be officially tasked with its production and maintenance.

As been described in part 2 . it's quite important to set in place a mechanism for managing, update and maintain the website and content.

For each web page or section of your web page appoint a content coordinator/editor from the relative business unit, who will be responsible for its timeliness and its accuracy, and will be officially tasked with its production and maintenance. It's recommended here to use the same table utilized for Meta data by adding a field illustrate the update schedule and expiry date (i.e weekly, monthly , quarterly, yearly , ... ), this is need as well to keep a record of update date of each content.

| N<br>o. | Tit<br>le | Crea<br>tor | Subj<br>ect | Descrip<br>tion | Publis<br>her | Contrib<br>utor | Da<br>te | Ty<br>pe | For<br>mat | Identi<br>fier | Sour<br>ce | Langu<br>age | Relat<br>ion | Cover<br>age | Rig<br>hts | Upda<br>te<br>Sched<br>ule |
|---------|-----------|-------------|-------------|-----------------|---------------|-----------------|----------|----------|------------|----------------|------------|--------------|--------------|--------------|------------|----------------------------|
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |                            |
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |                            |
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |                            |
|         |           |             |             |                 |               |                 |          |          |            |                |            |              |              |              |            |                            |

Addition to that, use the template below to assign roles and responsibilities for website maintenance.

| Task                              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Frequency                    | Person Responsible                     |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|----------------------------------------|
| Hardware monitoring and detection | <ul style="list-style-type: none"> <li>If you are running your own server, conduct automated checks to ensure that the web server is physically running well. A range of tools are available to monitor server availability, reliability and responsiveness. Among the analysis they provide is: <ul style="list-style-type: none"> <li>o Server response times</li> <li>o End-user response times</li> <li>o Server error rates and types</li> <li>o Processor loads</li> <li>o Hard disk utilization</li> <li>o Bandwidth utilization</li> </ul> </li> </ul> | Regularly throughout the day | Technical Architect / Hosting Provider |

|                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                            |                                                             |
|-------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|-------------------------------------------------------------|
|                                                             | <ul style="list-style-type: none"> <li>o Traffic patterns</li> <li>o Queue sizes</li> <li>o Timeouts</li> </ul> <ul style="list-style-type: none"> <li>• Unavailability, or reduction in reliability and responsiveness of the website may require upgrading, improving or extending the hardware and network capacity in use.</li> </ul>                                                                                                                    |                                                            |                                                             |
| Software and applications maintenance                       | <ul style="list-style-type: none"> <li>• Carry out any required patches and updates as scheduled maintenance.</li> </ul>                                                                                                                                                                                                                                                                                                                                     | Once every two weeks                                       | Technical Architect / Hosting Provider                      |
| Backup                                                      | <ul style="list-style-type: none"> <li>• Backup website on a secure and reliable storage medium to ensure that a hardware failure in your web server does not wipe out your website.</li> <li>• Also have another backup at an alternative location in order to safeguard against loss of network connectivity to the building, failure of key facilities such as air cooling, or catastrophic failure due to natural disaster or hostile action.</li> </ul> | Based on backup policy – daily, weekly, monthly and yearly | Technical Architect / Hosting Provider                      |
| Security                                                    | <ul style="list-style-type: none"> <li>• Ensure a defense-in-depth security (see section on “Security Guidelines” in <i>Part 2: Development</i>)</li> </ul>                                                                                                                                                                                                                                                                                                  | 24/7 security monitoring                                   | Technical Architect / Hosting Provider                      |
| Regular communication with hosting provider (if applicable) | <ul style="list-style-type: none"> <li>• Review hosting service in relation to the website's changes and growth, e.g. to assess if the increased level of usage has not exceeded bandwidth capacity originally specified.</li> </ul>                                                                                                                                                                                                                         | Monthly                                                    | Technical Architect / Web Project Manager                   |
| Regular communication with website users                    | <ul style="list-style-type: none"> <li>• Monitor complaints/feedback (see section on “Complaint/Feedback Forms and System” in <i>Part 2: Development</i>)</li> <li>• Maintain public awareness (see section on “Promotion” in <i>Part 3: Implementation</i>)</li> </ul>                                                                                                                                                                                      | Check for complaint/feedback daily                         | Communication Coordinator / Customer Service Representative |

|                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                             |                                     |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|-------------------------------------|
|                              | <ul style="list-style-type: none"> <li>• Inform when website is down</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                             |                                     |
| Manage content               | <ul style="list-style-type: none"> <li>• Ensure content is up-to-date, relevant, accurate, error-free and meet standards set</li> <li>• Review and edit work-in-progress, and add metadata</li> <li>• Maintain existing content</li> <li>• Respond to user comments about existing content</li> <li>• Plan for new content</li> <li>• Review website policy pages and terms of use to reflect the latest organization standards and procedures</li> <li>• Review workflow</li> <li>• Review metadata and taxonomy</li> <li>• Review content for archiving</li> <li>• Update copyright date</li> </ul> <p>(see section on “Content Management” in <i>Part 2: Development</i>)</p> | Content maintenance plan, daily, weekly, monthly and yearly | Web Content Manager / Web Editor    |
| Check links                  | <ul style="list-style-type: none"> <li>• Use link checker to check for broken links and fix them.</li> <li>• As you find broken links, take the opportunity to evaluate the value of the link. Some options are: <ul style="list-style-type: none"> <li>o Update the link with a new URL and ensure your link text is accurate for any replacement URLs</li> <li>o Remove the link because you cannot find a working URL</li> <li>o Remove the link because its value has lessened. For example: a past conference notice</li> </ul> </li> </ul>                                                                                                                                 | Once a week                                                 | Web Content Manager / Web Editor    |
| Check functionalities        | <ul style="list-style-type: none"> <li>• Check the functional elements of your website such as search, forms, payment service, e-newsletter subscription, etc.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Monthly                                                     | Web Developer / Web Content Manager |
| HTML and CSS code validation | <ul style="list-style-type: none"> <li>• Continued validation of codes for updated and new content</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Continuous                                                  | Web Developer / Web Content         |

|                                                            |                                                                                                                                                                                 |             |                                                        |
|------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|--------------------------------------------------------|
|                                                            |                                                                                                                                                                                 |             | Manager                                                |
| Improve accessibility                                      | <ul style="list-style-type: none"> <li>Check accessibility for updated and new content and continue to improve accessibility</li> </ul>                                         | Continuous  | Web Developer / Web Content Manager                    |
| Compatibility with browsers, operating systems and devices | <ul style="list-style-type: none"> <li>Check compatibility of content with new versions of browsers, operating systems and devices</li> </ul>                                   | Continuous  | Web Developer / Web Content Manager                    |
| Search Engine Optimization (SEO) enhancements              | <ul style="list-style-type: none"> <li>Continue to analyse your website user behaviour and research new techniques for SEO to boost your website in search rankings.</li> </ul> | Continuous  | Web Developer / Web Content Manager                    |
| Review website guidelines                                  | <ul style="list-style-type: none"> <li>Review the policies, guidelines for your website (e.g. content management policies, editorial guidelines, style guide)</li> </ul>        | Once a year | Web Project Manager / Web Content Manager / Web Editor |

## VII- Part 5: Continuous Improvement

### Ø What It Is

An ongoing measurement, collection and analysis of data on different aspects of the website (technical, content, service) and its users' behaviour for the purpose of improving the website so that it continues to help the organization achieve its goals.

When planning your website, you developed SMART goals that were Specific, Measurable, Achievable, Realistic and Timely, and also Key Performance Indicators (KPIs). This section focuses on the tools that can be used to monitor performance. It involves collecting data to determine if the website is meeting desired standards or targets.

### Ø Why It's Important

Monitoring and evaluation of the website is necessary to understand whether the website succeeded or failed to achieve its objectives. It is also needed to determine whether the website is meeting the needs of target audiences. And if not, the evaluation should offer suggestions for how to improve your website.

### Ø How to Implement

It is important to collect a variety of metrics—not just visits or page views—to get a holistic picture of how well you are delivering your information and services through your website.

A successful web analytics practice requires a well-considered framework that will help you address all the important aspects of your website measurement and reporting.

This part covers the following:

- Tools to Measure KPIs
- Use of Results to Improve Website

## 5.1 Tools to Measure KPIs

You can measure many of your KPIs through web analytics tools.

### a. Web Analytics

The two main methods of measuring website usage are:

- Server-side, where data from the web server logs is analysed. There is software that can be installed directly on the computer that hosts the website and then analyses its activity logfile, e.g. WebTrends.
- Client-side, where data from the user's browser is analysed, e.g. Google Analytics.

A list of web analytics tools can be found at:

- [http://en.wikipedia.org/wiki/List\\_of\\_web\\_analytics\\_software](http://en.wikipedia.org/wiki/List_of_web_analytics_software)
- <http://web-analytics-review.toptenreviews.com/>

### Top 5 Traffic Analysis Tools

| Traffic Analysis Tools |                  | Usage (%) | Market Share (%) |
|------------------------|------------------|-----------|------------------|
| 1.                     | Google Analytics | 49.3      | 80.0             |
| 2.                     | LiveInternet     | 3.9       | 6.2              |
| 3.                     | Yandex.Metrika   | 3.5       | 5.7              |
| 4.                     | WordPress Stats  | 3.0       | 4.9              |
| 5.                     | StatCounter      | 2.2       | 3.5              |

Percentage of sites as of 1 November 2013.

Source: W3Techs.com.

Google Analytics, the most popular traffic analysis tool, is and widely used to provide web statistics and will meet the monitoring requirements of most basic websites. However, you may wish to have another web analytics software other than or in addition to Google Analytics. Issues to consider when choosing a web analytics software include the following:

- How much does it cost?
- Can you accomplish your goals with free web analytics?
- How easy is it to use?
- How much details are provided?
- Can you reanalyze data if you decide to change something?
- Can you reanalyze subsets of your logs for more focused views?
- How many page views per month can the solution track?
- Is the data reported easy to understand, does it include effective data visualizations, and can it be re-used for your reporting purpose?

- Can you integrate with other sources of data?
- What type of technical support/help is provided?

What can web analytics tell you?

| Measure         | Definition                                                                                                                                                                                                                                                                                                                                | How to Use                                                                                                                                                                                                                                                                                                                                                   | Considerations                                                                                                                                                                                                                                                     |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Total Visits    | A period of interaction between a user's browser and a particular website, ending when the browser is closed or shut down, or when the user has been inactive on that website for a specified period of time. A 30 minute limit ("time out") is used by many analytics tools but can, in some tools, be changed to any number of minutes. | Most universal, fundamental, and accurate way to measure volume of traffic. Also most popular and widely reported metric for cross-comparing traffic from various websites.<br><br>Tracked over time, total visits create a historical trend of your website traffic and a baseline that can be used to compare against future traffic patterns and changes. | Total visits are sometimes confused with number of unique visitors who use your website.                                                                                                                                                                           |
| Unique Visitors | The uniquely identified user that is generating page views within a defined time period (e.g. day, week or month).<br><br>The identification is usually via a persistent cookie that has been placed on the computer by the website page code.                                                                                            | It is the only measure that calculates how many people (or more precisely computers) visited your website in a given time. Like with total visits, unique visitors should be tracked over time.                                                                                                                                                              | "Visitor" is not the same as the human being sitting at the computer at the time of the visit, since an individual can use different computers or, on the same computer, can use different browsers, and will be seen as a different visitor in each circumstance. |
| Page Views      | The number of times a page was viewed during the designated time period (e.g. monthly).                                                                                                                                                                                                                                                   | Used for measuring overall volume and how much content people use on your website.                                                                                                                                                                                                                                                                           | This metric is also universal and cross-comparable with other websites.                                                                                                                                                                                            |

|                          |                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                           |
|--------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                          |                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                                                                                                           |
| Page Views per Visit     | The number of pages a user viewed in a single visit or session.                                                        | Used for understanding engagement level of a visit.                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                           |
| Average Visit Duration   | The amount of time a user remained on the website during a visit or session.                                           | Should be interpreted based on each website's goals. For example, is your website's goal to get your customers the information they need in the least amount of time? Or, are you trying to engage them with your website content so that they stay on the website as long as possible? This metric will help you determine if your website is meeting those goals. |                                                                                                                                                                                                           |
| Time on Page             | Time users spend on individual pages.                                                                                  | Critical for measuring effectiveness of specific pages.                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                           |
| Bounce Rate              | The percentage of single-page visits or visits in which the person left your website from the entrance (landing) page. | This is important as it can indicate that a user has not found what they are looking for.                                                                                                                                                                                                                                                                           | Ideally the bounce rate should be as low as possible, as that shows that users are engaging with the website. Depending on the type of website a typical bounce rate could be between 30 and 50 per cent. |
| New vs Returned Visitors | Ratio between first-ever website users to returning users.                                                             | Used to understand if your website is attracting the same audience on a consistent basis, driving new users to the website, or a balance of both.                                                                                                                                                                                                                   |                                                                                                                                                                                                           |
| Source of Visit          | The source of a visit is the specific place that sent the                                                              | Used to understand the findability of your website, the                                                                                                                                                                                                                                                                                                             | If the proportion of people finding                                                                                                                                                                       |

|                    |                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                                |                                                                                                                                 |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|                    | <p>visit to your website. Sources are grouped in to the following main sources:</p> <ul style="list-style-type: none"> <li>• Search engines (Google, Yahoo!, Bing, etc.)</li> <li>• Direct traffic (typing the domain name into the web browser or through users' bookmarks)</li> <li>• Referring sites (clicking on a link from another website)</li> </ul> | <p>extent to which users are bookmarking your website, and the extent to which other websites are linking to your website.</p> | <p>your website through search engines are small, it may be worth spending time optimizing your website for search engines.</p> |
| Location           | User's location based on his/her IP address.                                                                                                                                                                                                                                                                                                                 | Used to find out where your users are located.                                                                                 | Important for location-specific content on your website                                                                         |
| Platform or Device | The type of browser, browser version, operating system, operating system version, and device (brand and model) used to visit your website.                                                                                                                                                                                                                   | Used to find out the platforms or devices your users are using.                                                                | Important for developing content and layout of website                                                                          |
| Page Load Time     | How quickly pages load on your website.                                                                                                                                                                                                                                                                                                                      | If pages take a long time to load, users will abandon your website, and search engines will not crawl them.                    | Make sure your website is optimized to load pages as fast as possible.                                                          |

Most web analytics tool can provide these same statistics. This basic information is a good way to keep track of how people are using the website. Review your web statistics at least monthly and take action when needed.

How to use web analytics for improving your website?

There are several other standard metrics that are useful in website planning and design, some of which are presented in this section.

*Website Analysis vs. Granular Analysis*

Figures for the whole website may indicate that the website is known to potential users, search engines and other websites. A more detailed analysis is needed to answer specific questions about whether the services or information provided are meeting user needs. Analytical tools can be configured to show:

- The most popular pages
- The most popular pages for users accessing the website from different browsers on desktop and mobile phones. Find out if they are same or different
- The most popular areas (groups of pages)
- Usage of a group of webpages and documents relating to a specific subject or campaign
- How demand for specific pages changes over a selected timeframe (e.g. showing daily activity over a week)
- Form field tracking to identify form fields that are causing problems

This type of information can then be used to promote popular sections of the website (e.g. on the home page).

You may also want to monitor a specific page or service that is a core service for your organization. Through web analytics you can monitor the route the users takes to go to that specific page, how long they spend on the page, and the percentage of users that completed the tasks.

Based on the analysis you may need to improve internal site search, improve navigation menus and/or improve your content to ensure that instructions are clear and easy to understand.

### *User Experience*

Web analytics can also be used to track user journeys, for example:

- The search engine or website that led a user to the website
- Entry and exit pages
- The route taken by the user through the website

Understanding how individual users move within the website can help web teams to design improvements to the structure of the website. For example, the homepage was traditionally seen as the starting point for the majority of user journeys. However, web analytics is showing that this is not necessarily the case because search engines, bookmarks and links from other websites lead users directly to the most relevant page.

Deeper analysis of time spent within the website and numbers of pages visited can be used to understand whether goals are being achieved. For example, a user might take longer to complete a task if they take a sub-optimal route through the website.

The accurate collection and analysis of usage data is a powerful method for evaluating a website. However, web analytics alone does not provide a full picture of the way a website is used and who it is used by. Web analytics should be used alongside other data in order to gain a deeper level of insight, including:

- Qualitative data (e.g. from online satisfaction surveys, interviews, focus groups etc.)
- Observational data obtained from user testing
- Expert reviews

#### b. Search Metrics

With web analytics tool, you can also collect information about how users search to get to your website, and how users search when they are at your website.

You can also find more information about external and internal searches for your website by using the search engine webmaster tools.

What to collect?

| Measures                                                | Definition                                                                                           | Actions to Take                                                                                                                                                                                                   |
|---------------------------------------------------------|------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| External Search                                         |                                                                                                      |                                                                                                                                                                                                                   |
| Search Engines                                          | Search engines (Google, Bing) that send traffic to your website.                                     | Use their webmaster tools to optimize your website for these search engines, to make your content easier to find.                                                                                                 |
| Top Referring Search Terms                              | The most-used words and phrases people type into commercial search engines to find your content.     | Verify that you are using the words of your customers (not bureaucratic, organizational jargon). Use their terminology in page titles, page content, keywords, and metadata to help your readers and improve SEO. |
| Top Referring Search Terms with low Click Through Rates | The most common links followed for specific search terms that do not lead to clicks on your website. | Review and update any content related to these search terms to make content more useful.                                                                                                                          |
| Internal / Website Search                               |                                                                                                      |                                                                                                                                                                                                                   |
| Top Search                                              | The most-used words and phrases                                                                      | Create new content or update                                                                                                                                                                                      |

|                                              |                                                                                                                                                                                                                      |                                                                                                                                                                                                                                                         |
|----------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Terms/Phrases                                | people type into your website's search box                                                                                                                                                                           | existing content to incorporate the "words of your customers" in your metadata and content so searchers can find the right information.                                                                                                                 |
| Top "No Results" Queries                     | Most popular, valid searches that do not return any results on your website's search results page (because you do not have the content on your website, or the content is not findable by the person's search term). | Review your content to see if you need to add new content, or update existing content to include the words your readers search for.                                                                                                                     |
| Top Searches with Low Click-Through Rates    | Most popular search terms that people generally do not act (click) on.                                                                                                                                               | Incorporate language from these popular search terms into page titles or descriptions, to encourage searchers to click on your relevant page.                                                                                                           |
| Top Changing Search Terms (Movement Up/Down) | Shows trending topics, what's hot or not.                                                                                                                                                                            | Investigate why people might be losing interest in once-popular content and consider archiving if it is no longer needed.<br><br>For newly popular terms, create new content or update existing content to ensure it is current, accurate and complete. |
| Percentage of Visitors Using Site Search     | Percentage of people who visited your website and used the search box on your site.                                                                                                                                  | Focus on both search and navigation to help users find information, and make popular content more visible from entry pages.                                                                                                                             |

### c. User Satisfaction Metrics

So far the information collective is quantitative. It is also important to collect qualitative data to understand how users perceive the information and services on your website.

Source of qualitative data collection methods include:

- Online and offline surveys, including user satisfaction surveys (discussed below)

- User testing that could take place in a lab or online where participants are asked to undertake tasks (see section on “Usability Testing”)
- Focus group discussions where small groups of people gather together for in-depth discussion on website-related issues such as website preferences and priorities, use of related websites, purpose and intention of visits to the website, and reaction to the visual design.

### User Satisfaction Surveys

There are four core questions for the user satisfaction survey. They include:

- Overall satisfaction with the visit
- Extent to which user achieved purpose of visit
- Rating of the website on key dimensions
- Likelihood to recommend the website to others

| User Satisfaction Survey                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>A. How satisfied were you with your visit today?</p> <p> <input type="radio"/> Very satisfied<br/> <input type="radio"/> Satisfied<br/> <input type="radio"/> Neither satisfied nor dissatisfied<br/> <input type="radio"/> Dissatisfied<br/> <input type="radio"/> Very Dissatisfied<br/> <input type="radio"/> Don't know </p> <p>B. Did you get what you wanted from the website?</p> <p> <input type="radio"/> Got everything I wanted<br/> <input type="radio"/> Got most of what I wanted<br/> <input type="radio"/> Got some of what I wanted<br/> <input type="radio"/> Got none of what I wanted </p> <p>C. Please rate the website on the following aspects:</p> <p> <input type="radio"/> Ease of use of the website<br/> <input type="radio"/> Attractiveness of design/appearance<br/> <input type="radio"/> Ease of finding information/services<br/> <input type="radio"/> Clarity of information – clear and easy to understand<br/> <input type="radio"/> Quality of information – accurate and up to date<br/> <input type="radio"/> Usefulness of site search </p> <p> <input type="radio"/> Very good </p> |

- .. Good
- .. Neither good nor poor
- .. Poor
- .. Very poor
- .. Don't know

D. How likely are you to recommend this website to a friend, colleague or family member?

- .. Definitely
- .. Probably
- .. Not sure
- .. Probably not
- .. Definitely not

E. Purpose of visit (this open question is to clarify what the website is being used for and will also aid interpretation of ratings for user satisfaction and extent to which user achieved purpose of visit).

#### User Profile

F. Age

- .. 16-19
- .. 20-24
- .. 35-44
- .. 45-54
- .. 55-64
- .. 65-74
- .. 75+

G. Gender

- .. Male
- .. Female

H. Do you have any long-term illness or physical or mental health condition which limits your daily activities or work you can do, including any issues due to old age?

- .. Yes
- .. No
- .. Prefer not to say

I. How often do you personally use the Internet?

- .. Everyday
- .. Every two or three days
- .. About once a week
- .. About once every two weeks
- .. about once a month
- .. Less often
- .. Don't know

The wording of these questions and order in which they are asked must be maintained exactly as set out to maximize consistency between surveys, and allow for comparison.

Provide option to leave email address for follow-up: Allow respondents to provide an optional email address for any follow-up communications. This may be helpful to clarify feedback or to gain a deeper understanding of users' motives and opinions. For example, if users express a low level of satisfaction with a specific service, you may want to investigate why and try to provide solutions to improve it.

### Survey Design and Implementation

Run surveys for one week minimum: Surveys should run over a minimum period of one week period in order to capture both weekday and weekend users.

Use an interstitial approach: The survey should be completed online by the user at the end of the visit. The recommended approach is to give users a chance to opt out by using an "interstitial"—a page that appears between two other pages. The interstitial method works as follows:

1. The user clicks on a link from the website, but instead of launching a pop-up window, are taken to a new page in the same window en route to the destination page.
2. The user is then given the option to take the survey or not, or to do the survey later.
3. For those taking the survey immediately, the survey is launched in a new window (after being informed this would happen).

The interstitial method is particularly appropriate for creating surveys, which comply with accessibility requirements (Level Double-A of the W3C Web Content Accessibility Guidelines).

Baseline and benchmark: It is recommended that the user satisfaction survey is conducted about six months after the launch of the website to create a baseline of customer perception

and benchmark from year-to-year, or every six months, to show improvements in overall experience and increased ability to complete purpose of the customers visit.

Service-specific satisfaction data: The above user satisfaction survey collects data on the overall website, but you may wish to collect satisfaction data at the page-level or for a specific service, which can be highly valuable.

Online survey tools: If you are using a CMS, it should have a plug-in for online survey. If not, you can use a free online survey tool such as SurveyMonkey (<https://www.surveymonkey.com>) and iPerceptions (<http://www.iperceptions.com/en/product/overview/>)

Complement survey results with feedback from online form: Monitor the correspondence from the complaints/feedback form to see what users are saying about the organization and about the website. Record all the comments, both positive and negative, that are related to the website.

## 5.2 Use of Results to Improve Website

Now that you have collected information about the website and about your users from different sources and in different ways, what do you do with them and how do you use them to improve your website?

Various aspects of your website can be improved such as:

- Navigation
- Content
- Internal Search
- Technical Performance

### a. Navigation

- Users should be able to find the information they want and know exactly where they are in the website at any time.
- Identify the most popular pages or services and analyse the path that users take to access them. Can users access these popular pages with less clicks?
- Analyse the pages and services that your organization would like to direct more users to and re-design the navigation to these pages and services.
- Check the terms in the navigation menus to see if they need to be changed so that it is easier for users to understand where the link is taking them.

- Check the order of the terms in the navigation menus as well. Users tend to click the options on top of the menu rather than at the bottom of the menu.

#### b. Content

- Information on the website should be clear, easy to understand, up-to-date, accurate and meet the user's needs.
- Online forms should be easy to complete with clear instructions.
- From your data, check the content quality of your most visited pages to make sure that they are up-to-date.
- Check also pages with high exit rates, where the user views that page and then leaves the website, and investigate the reason for users' exit from the pages. Reasons could include page loading error, irrelevant content, poor or absent call to action, to name a few.
- Track the effect the improved pages have on the exit rates and soon you will pinpoint the style of writing engages your target audience.
- Track the form fields using web analytics tools to identify form fields that are causing problems.

#### Improving content by analysing users' search behaviour

- The Bing and Google Webmaster Tools offer tools to find out about how your website is searched, what keywords readers use to find your website, and how your website ranks for a given keyword or phrase.
- In addition to gathering data about what keywords are currently being used, there are tools designed to help you analyse other related terms being used on external search engines, that are not currently being directed to your website, such as Google Adwords Keyword Planner (<https://adwords.google.com/ko/KeywordPlanner/Home>).
- They help to identify other keywords you could be using to attract target audiences to your website.
- Other sources of user research (surveys, focus groups, etc) may also provide insight into other words being used by your audience.

- Once you have an understanding of the keywords and phrases being used to find your website and search for the information they need on your website, you need to improve your website.
- Start with the most popular but least performing content areas and work on improving the taxonomy, titles and descriptions. For example, in your taxonomy, you may have the keyword vehicle registration but people are searching for car registration. In this case, you would want to tag your relevant content with car registration as well.
- If what you write in your website corresponds closely to what users of search engines are looking for, it is more likely that the website will rank high in the results.
- Monitor before and after performance, to show improvement and identify what changes have the most effect (so you can apply those lessons to the next most popular set of content).

#### c. Internal Search

- Users search to either navigate your website or when they are stuck and unable to find what they are looking for.
- Studying the usage of your website's internal search can help to spot the failings of your website.
- The keywords that users are using in the internal search should also be studied to see if they match the terms used in your taxonomy, navigation menus and in your content.

#### d. Technical Performance

- Monitoring website availability and responsiveness is essential to ensure that your website continue to be accessible to all.
- The website should perform adequately using a dial-up modem and equipment and hardware that are three to five years out of date. This helps ensure that sections of users are not disadvantaged, e.g. for regional users with low bandwidth in remote areas, or users with old equipment.

## Ø What It Is

Social media is transforming how government engages with citizens, allowing agencies to share information and deliver services more quickly and effectively than ever before. As social content, data, and platforms become more diverse, agencies have a responsibility to ensure these digital services are accessible to all citizens. The most popular social media tools include: Facebook, Google+, LinkedIn, Twitter and YouTube.

## Ø Why It's Important

Social media is a powerful tool to help agencies meet program goals. The primary functions are to:

- Share: Inform citizens of public services through social content
- Listen: Observe, analyze and understand what citizens are sharing to improve public services
- Engage: Respond, collaborate and create with citizens to improve public services (sharing and listening)

Each government agency has a unique mission and unique strategic needs for providing services to the public. As a result, each agency's social media strategy may include emphasis on different combinations of these three functions to provide the most benefit for citizens.

These benefits can include but aren't limited to:

- More effective distribution of critical information to citizens and communities, whether for emergency response, education or awareness.
- More responsive public programs that citizens help shape and better customer experience by listening for feedback.
- Better informed strategies that operate on the most up-to-date and accurate data, leading to greater efficiency.
- Increased use of innovative tools and services

## Ø How to Implement

This part covers the following:

- Develop Social Media Strategy to achieve the objectives set
- Decide on what social media tools to use
- Plan and implementing social media use
- Manage social media sites
- Monitor and evaluate social media activities

## 6.1 Develop Social Media Strategy

A social media strategy is necessary to make sure that the use of various platforms is in alignment with your organization's mission. A social media strategy provides guidance to government employees responsible for social media accounts and helps mitigate the risks posed by using highly interactive third-party platforms. You can use the following questions as a template for designing organizational guidelines.

### a. Strategy Questions to Consider

Forrester has developed the "POST Approach" to help organizations develop their social media strategy. POST stands for People, Objectives, Strategy, and Technology.<sup>8</sup>

**People/Audience** – Who are your target audience and how do they use social media?

You want to know where they are and what they are already doing to be able to determine how they will engage with your social media initiative. Do not use a "build it and they will come" approach. Instead, go to where they are.

- What does your audience want to talk about and willing to engage in conversations about?
- Where does your audience want to have these conversations?
- What value can you add to the conversations?

**Objectives** – What are your goals? What do you want to get out of these relationships?

Your social media goals should be aligned with your organization's goals and strategies.

When using social media sites for work purposes, the objective could be to:

- promote organisation's policies, programs and services
- reach a wider, more diverse audience quickly
- educate, inform and entertain
- promote discussion and debate
- gather and consider a wide variety of ideas and opinions
- promote events and community engagement activities
- improve awareness of community expectations and needs.

**Strategy** – How do you change your relationship with your stakeholders?

*Internal Considerations*

- What are the rules of engagement for employees?
- What will be the workflow for developing, reviewing and approving content for social media sites?
- What will you share? Are you going to post only major news? Are you going to ask questions? Are you going to provide tips?
- How will you monitor and archive the shared content and its comments?

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<sup>8</sup> <http://forrester.typepad.com/groundswell/2007/12/the-post-method.html>

- How will you measure the impact of your social media initiative?

#### *External Considerations*

- How will you engage with members of the public?
- How will you incorporate and distill feedback?
- How will you respond in a timely manner and ensure action if required?
- How will you handle mishaps such as insensitive statement/opinion, unwanted intrusion, heated topic, misinterpreted message, and hack or wrong account posting?
- Who should be informed of mishaps and who are authorized to respond to mishaps?

#### Technologies – What applications should you use?

This step reflects the choices you make in the first three steps. Do not begin with technology then try and find uses for it.

### b. Elements to Address in Social Media Strategy

#### i. Employee Access to Social Media

The use of social media for personal and professional purposes is blurring. Many staff members within a government organization are connecting with each other, and connecting with other departments or agencies through social media sites.

The issue of whether or not to allow employees unrestricted access to all social media sites must be decided. In case organizations wish to manage access, there are two main ways to do so:

- By controlling the number or type of employees who are allowed access to social media sites; or
- By limiting the type of sites that are approved for employee access.

#### ii. Social Media Account Management

Account management encompasses the creation, maintenance and closing of social media accounts. Decision needs to be made on who can approve the set up and closing of an organization social media account, and what are the procedures.

**Account Creation:** A social media account establishes an organization's online identity. Consider the name, and look and feel of your social media sites. Ideally, they should be consistent with your website.

**Login and passwords:** Each new account requires a URL, username or email address, and a password. A proper record of login ids and password must be maintained. This is critical as multiple people may be authorized to post on behalf of the organization.

Account Status: It is important to define whether the engagement may be undertaken through official accounts only, or the officials may be permitted to use personal accounts also for posting official responses.

### iii. Rules of Engagement

As part of your social media strategy, you need to develop rules about how staff members in your organization use social media to engage with the public, restrictions on use for personal interests, and consequences for violating these terms.

Consider including these rules in your strategy:

- Identity – Where possible, disclose your position as a representative of your organization, unless there are exceptional circumstances, such as a potential threat to personal security. Never give out personal details like home address and phone numbers.
- Authority – Do not disclose information, make commitments or engage in activities on behalf of the government unless you are authorized to do so.
- Relevance – Comment on issues relevant to your area, and provide relevant and productive comments that will help take the conversation to its logical conclusion.
- Professionalism – Be fair, honest and respectful to all and do not make personal comments for or against any individuals or organizations. Also, professional discussions should not be politicized.
- Accuracy – Make sure that the information you published is accurate. If you are unsure about something, do not publish it and seek advice.
- Openness – Be open to comments, positive and negative. It is NOT necessary to respond to each and every comment.
- Responsiveness – Answer questions in a timely manner.
- Compliance – Be compliant to relevant rules and regulations. Do not infringe upon copyright law and other laws.
- Privacy – Do not reveal personal information about other individuals.
- Organization Reputation – If you are using social media in a personal capacity, you should not identify your employer when doing so would bring your employer into disrepute

### iv. Content and Content Policy

- Who can add content and respond to questions and comments need to be decided upon before the launch of the social media site. There should not be an elaborate process of content review and approval as users expect quick responses on social media.
- Look at existing content development responsibilities and workflow within your organization. The same content developed for your website that has gone through the process of review, editing and approval can be re-used for your social media site.
- For response to comments and questions, at least one staff member (Social Media Specialist or Communication Specialist), but preferably a small trusted team, should be responsible for regularly engaging with your social media community.

- Response time will need to be discussed and agreed upon, and state any limitations to responding (such as outside business hours).
- Content moderation policy need to decide

Content moderation policies assist in setting user expectations for what should or should not be posted, and also specify when organizations will remove or edit user-submitted content. Moderation policies should be designed to operate in conjunction with the other legal statements, such as privacy and copyright.

A well-crafted content moderation policy will give an agency the justification it needs to remove or prevent inappropriate material from being published online, while also being simple enough that it does not inhibit participation in its initiative.

There are two types of moderation—

- pre-moderation and
- post-moderation

Pre-moderation is when the organization reviews and approves all user-submitted content before it appears online.

| Pros                                                                                                        | Cons                                                                                                                                                                                                                                                                                                                                                                                    |
|-------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Minimizes the risk of publishing inappropriate material</li> </ul> | <ul style="list-style-type: none"> <li>• Intensive in terms of staff time</li> <li>• May have a negative effect on user participation</li> <li>• Prevent conversations from forming as comments are held waiting to be cleared</li> <li>• Heighten perceptions of censorship as users will know that all their submissions are being vetted by the agency before publication</li> </ul> |

Post-moderation allows all user-submitted content to appear online automatically, where it will then be reviewed and edited or removed if necessary. Depending on the tool being used, post-moderation may also involve automated filters using a blacklist of offensive words or words highly likely to constitute spam.

| Pros                                                                                                                                                                                                                                                                                    | Cons                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <li>• Allowing users to see their comments appear online automatically helps to assure users that their comments are valued</li> <li>• Encourages more fluid conversation than would be possible if all comments were reviewed in advance</li> </ul> | <ul style="list-style-type: none"> <li>• Risk of inappropriate or offensive content being posted</li> </ul> |

The risks involved in adopting a less restrictive form of moderation can generally be accepted as one of the costs of maximizing user participation. However, pre-moderation may still be a more appropriate option for organisations expecting their online engagement initiatives to receive a large volume of inappropriate, offensive or other content which is not suitable for publication on organization-branded sites.

Organizations will find that some of the available moderation options depend on the online engagement tool being used. Organizations will generally have a wider range of administrative options over a blog they host themselves than they would over, for example, a Facebook page. But regardless of what moderation policy an agency uses, they should communicate it clearly to users and follow it fairly and consistently.

#### v. Security

- Agree on security measures that include password security, authentication of identity using public key infrastructure and virus scans.
- Include awareness programmes and guidelines on the secure use of social media to avoid phishing where employees post information about themselves or the organization on social media sites, which attackers then use to manipulate users. A related concern is the posting of citizens' personal and protected information by organization employees.

#### vi. Training

- Develop a training plan for officers with access to official social media accounts on the use of social media and on their role and responsibilities.
- Areas of training include: public relations, code of conduct, privacy, defamation and intellectual property.

#### vii. Legal Issues

- Review the legal implications of using social media to ensure that employees abide by all existing laws and regulations, including those related to privacy, freedom of speech, freedom of information, public records management, public disclosure and accessibility.

#### viii. Citizen Conduct

- Social media sites allow for instant two-way public communication between government and citizens. Public sector organizations must decide how to handle this engagement with citizens.
- Including terms of use and a moderation policy on the social media sites is recommended as they set ground rules for public participation on the sites. They should be framed in such a

way that they discourage anti-social, irrelevant, offensive, spam and/or inappropriate commercial submissions, among other things.

#### ix. Risks

- Misrepresentation and misinterpretation – Information and views can spread very quickly and widely through online media and can easily be subject to misinterpretation and misrepresentation.
- Lack of control – Once online material is made public there is little control or influence over how it might be used or modified or integrated.
- Resourcing – Establishing, contributing to and moderating social media sites takes expertise, time and resources.
- Privacy – There is no guarantee that privacy can be protected.
- Security – High traffic sites/accounts may pose a greater risk for malware or spyware.
- Time wasting – Employees may use social media in a way that interferes with their duties.
- Bandwidth – Some social media requires higher levels of bandwidth.
- Accessibility – Some sites may not provide content in accessible formats

## 6.2 Decide on What Social Media Tools to Use

The five core social media tools are:

1. Social networks – A term often used to refer to the websites used to connect and interact with other individuals. Interaction is often informal and entirely web-based. Examples include Facebook and Twitter.
2. Media-sharing networks – Websites that allow users to share video and images. They also allow users to comment on their own media and the media uploaded by users. Examples include YouTube and Flickr.
3. Blogs – A discussion or information website that presents its entries in reverse chronological order and allows visitors to comment. Blogger and WordPress are examples of popular blogging tools.
4. Wikis – Web-based applications that allow users to add content to or edit a web page. The most popular example is Wikipedia.
5. Discussion forums – Online applications for holding themed discussions between groups of participants.

Simply selecting a social media tool because it is popular can be counterproductive if it is not suitable for the intended purpose or audience. It is important to first develop your social media strategy and then determine which social media tools will best meet your aim.

The table below provides guidance on how to select suitable social media tools based on what you wish to achieve.

| Networking                                                                                                                                                                                                                | Microblogging                                                                                                                                                                                                                        | Media Sharing                                               | Blog                                                                                                                                                                               | Wiki                                                                                                                                                                                                   | Forum                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| <p>I want followers to feel part of a community.</p> <p>I have a campaign on my website that I would like to generate interest in.</p> <p>I want to provide regular updates with links to media releases or websites.</p> | <p>I have a campaign on my website that I would like to generate interest in.</p> <p>I want to connect with interested members of the public.</p> <p>I want to provide regular updates with links to media releases or websites.</p> | <p>I would like to provide content via video or images.</p> | <p>I would like to educate and share a speciality topic and receive comments from the public.</p> <p>I need to regularly post updates and would like feedback from the public.</p> | <p>I want to provide factual information to promote my directorate's website.</p> <p>I want to provide researchers and students easy access to my information.</p> <p>I want expert to contribute.</p> | <p>I want to consult formally with the public on a particular subject.</p> <p>I want to moderate a forum.</p> |
| e.g. Facebook, Google+                                                                                                                                                                                                    | Twitter                                                                                                                                                                                                                              | YouTube<br>Flickr                                           | Blogger                                                                                                                                                                            | Wikipedia                                                                                                                                                                                              | Discussion forum on website                                                                                   |

The table below shows more detailed information about the strengths and weaknesses for social media tools to help you select the appropriate one(s).

|                | Strengths                                                                      | Weaknesses                                                                          |
|----------------|--------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| Social Network | <ul style="list-style-type: none"> <li>• Good for profile building,</li> </ul> | <ul style="list-style-type: none"> <li>• Difficult to build and maintain</li> </ul> |

|                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                 |
|-----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                       | <p>bypassing traditional media, providing information updates or informal networking; also sometimes suitable for consultation and deliberation.</p> <ul style="list-style-type: none"> <li>• Sophisticated content and community management features.</li> <li>• Social network sites often combine social media applications, such as chat, file sharing, blogging and discussion groups.</li> <li>• Can support large numbers of users and user generated content.</li> <li>• Possible to develop specialist applications for use on most network sites.</li> </ul> | <p>visibility amidst volume of media carried on sites.</p> <ul style="list-style-type: none"> <li>• Can be difficult to track activity around site beyond user accounts.</li> <li>• Some sites carry third-party adverts, over which users have very limited control.</li> </ul>                |
| Media sharing network | <ul style="list-style-type: none"> <li>• Sharing media is a familiar and popular online activity.</li> <li>• Use of media-sharing sites is often an effective distribution channel.</li> <li>• Requires basic facilitation by individual or team.</li> <li>• Supports low-level user interaction and networking.</li> <li>• Can be stand-alone or you can embed the media, hosted by the third-party site, within your own site and use your own site's commenting features to stimulate discussion.</li> </ul>                                                        | <ul style="list-style-type: none"> <li>• Limited community management features.</li> <li>• Difficult to build and maintain visibility amidst volume of media carried on sites.</li> <li>• Some sites carry third-party adverts, over which users have very limited control.</li> </ul>          |
| Blogs                 | <ul style="list-style-type: none"> <li>• Blogging is a mainstream activity and there is a standard format making it instantly recognizable and easy to follow for users.</li> <li>• The technical set-up and maintenance of blogs is straightforward, and content and community management</li> </ul>                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>• Blogs need to be information-rich and require large volumes of content to draw upon.</li> <li>• Best suited to one-to-many communication or conversation; less suited to debate or deliberation.</li> <li>• Content can become difficult to</li> </ul> |

|                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                          |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   | <p>systems are included as basic features. This means that set-up can take place within minutes.</p> <ul style="list-style-type: none"> <li>• Best suited to informal tone, and regular and succinct entries.</li> <li>• Best suited to use on an ongoing basis.</li> <li>• Can support large numbers of users and user generated content.</li> <li>• Text led but capable of carrying rich media (such as photographs or embedded videos).</li> <li>• Can be authored by an individual or a team, and access privileges can be set by the administrator.</li> <li>• Good for improving social network and search engine visibility through linking.</li> <li>• Good substitute for e-newsletters.</li> <li>• Good for boosting search engine optimization.</li> </ul> | <p>find, especially once it falls off the blog frontpage.</p>                                                                                                                                                                                                                                                                            |
| Wikis             | <ul style="list-style-type: none"> <li>• Supports asynchronous, group-based collaborative drafting and editing.</li> <li>• Supports content and community management.</li> <li>• Best used with stakeholder groups on pre-drafted content.</li> <li>• Can be stand-alone.</li> <li>• Can be used on a sporadic, episodic or ongoing basis.</li> <li>• Easy to track on-site activity.</li> <li>• Can be password protected.</li> </ul>                                                                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>• There can be specialized aspects involved in set-up and facilitation.</li> <li>• Wikis are often completely text based.</li> <li>• Can be difficult to generate and maintain user community.</li> <li>• Site features and components may be unfamiliar to less experienced web users</li> </ul> |
| Discussion Forums | <ul style="list-style-type: none"> <li>• Good platform for structured, asynchronous, topic-based consultation or deliberation between large numbers of people.</li> <li>• Free software available, but is</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Require new users to familiarize themselves with the functions and features of the discussion forum.</li> <li>• Can be difficult to generate and maintain a user community over</li> </ul>                                                                                                      |

|  |                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                                                          |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | likely to require hosting. <ul style="list-style-type: none"> <li>• Excellent community management features come as standard (such as member account management and user profiling).</li> <li>• Best housed within a larger site and run on an episodic basis.</li> <li>• Good for building new online communities or adding value to existing communities.</li> </ul> Best suited for use with stakeholder community | a longer period of time. <ul style="list-style-type: none"> <li>• May require a team of two or more facilitators, depending on traffic volume</li> </ul> |
|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------|

### 6.3 Social Media Implementation Tactics

After the social media strategy is designed, it is necessary to think about daily social media tactics—how your new online practices can support your organizational mission. Some of these activities will become *routine*, requiring agencies to conduct them on a daily basis. Agencies will also engage in *ad hoc responses* to emerging issues, while pursuing *planned campaigns*.

#### Tactic 1: Pushing Content

Provide facts, press releases, and web content on social media channels to inform and educate the public. This tactic should be one of your routines to distribute and broadcast web content via social media channels. It will help to reach parts of your audience who may never visit your official government website.

#### Tactic 2: Pulling Content

In addition to providing official government content, citizens and other stakeholders can be encouraged to actively provide their insights, feedback, and even their own online products, such as videos, pictures, comments to blog posts, etc.

Popular pull mechanisms include the use of specific Twitter hashtags, such as the State Department's #AskState hashtag, or caption and picture contests where agencies ask their followers to send in their own pictures, which are then featured on a government blog.

#### Tactic 3: Networking

Not all social media activity has to be fast and furious and a constant back and forth between the account holders and the public. Instead, social media interactions among the groups you consider to be your main audiences can help you understand how the public views issues that your agency is involved in.

Passive listening, fact-checking, and responsiveness are helpful tactics to establish your agency as part of a larger network. Understanding where issues are discussed and what the current “temperature” of the public mood is constitute an important social media tactic.

#### Tactic 4: Customer Service and Citizen Relationship Management

One of the most difficult-to-achieve tactics is to provide individualized customer service. Answering questions and responding to requests from individual citizens oftentimes requires in-depth case knowledge and human capacity.

### 6.4 Managing and Operating Social Media Sites:

Below are some guidelines on how to manage and operate social media sites.

- Humanize – Be a named, visible and accessible source of assistance.
- Spark conversations – Begin a discussion topic to help kick-start ideas from others, and periodically prompt users with questions or facts to keep the conversations going.
- Content quality – Aim for brevity and clarity, and make sure you proofread your content before posting.
- Keep track of discussions – In some cases, you can choose to receive e-mail alerts when new posts or comments are added to discussions.
- Monitor for inappropriate content – Comments that contain extremely offensive or inappropriate content should be removed. This does not mean that you should remove negative comments and complaints. Respond appropriately to negative criticism. Do not censor discussion or edit comments.
- Aligning social media with other channels - It is preferable that social media is not the primary information source. Instead, social media broadcasts or discussions should be based on, or direct users to, various online and offline resources.
- Committing to ongoing relationships - Establishing an official social media site creates an expectation of an ongoing dialogue and engagement with Government. Officers with access to official social media accounts should be appropriately skilled in the use of social media and briefed on their role and responsibilities. Officers should be provided with appropriate training in areas such as social media, media relations.

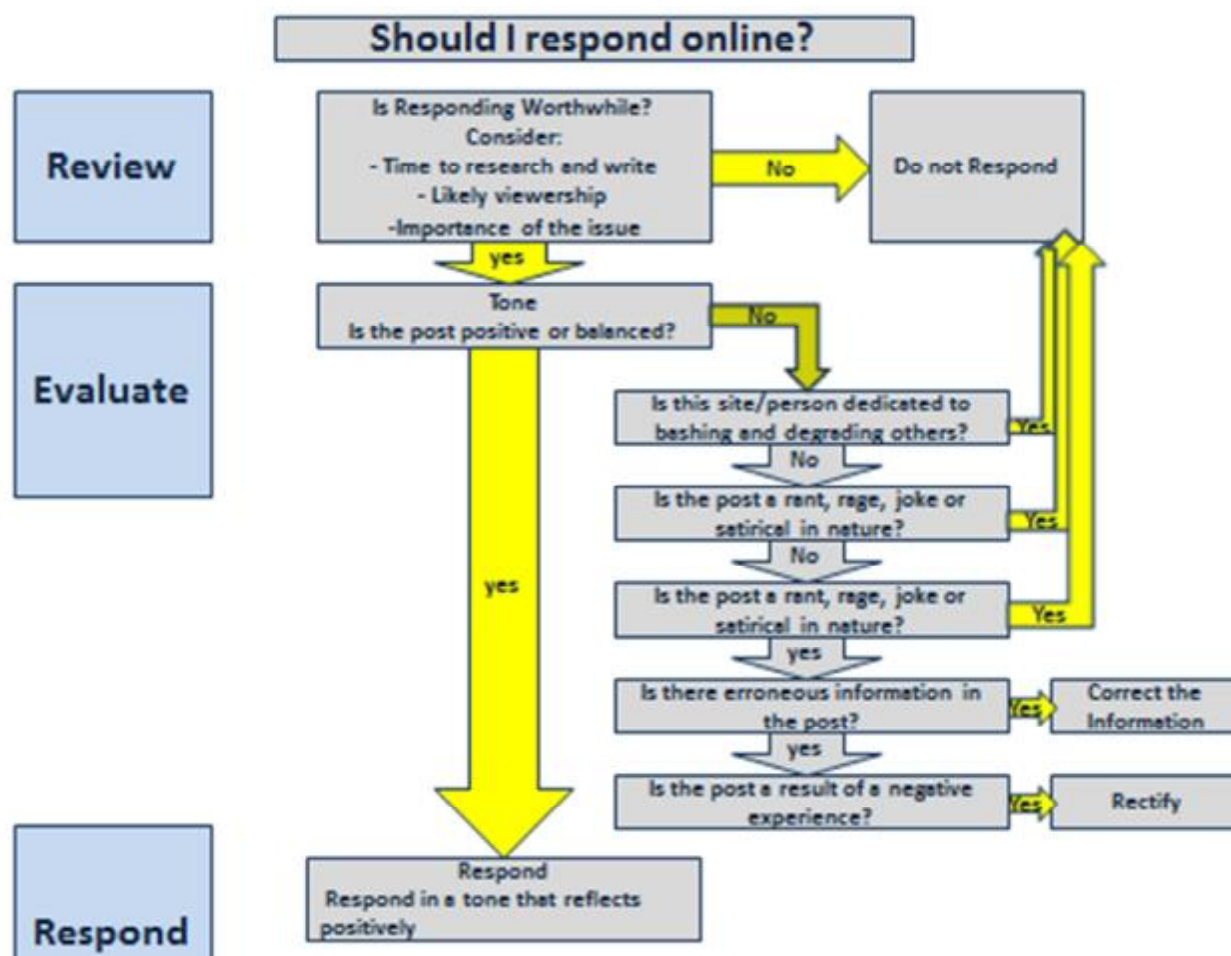
#### a. Responding with Social Media and Developing a Social Media Comment Policy

Responding to others within social media Government site is an official communication from the organisation, and the choice to respond should be based on deliberate decision making that considers the expectations of users of the service, as well as the risks associated with individual instances and issues.

In addition to considering the risk of responding, organisations should also consider the risks of not responding. Organisations should establish protocols in relation to when and who is

authorised to respond to media inquiries or political enquiries received via social media. Timeliness in response may mean additional employees may require permission to reply to enquiries via social media beyond normal approval channels.

Before a government employee responds to a comment on social media sites, the organisation should ask: "Should I respond online?" below is a simple guide through the process:



## b. Monitoring the Social Media Sites

Responding in a timely manner, particularly to critical issues, requires that Directorates monitor the activities on its accounts.

- Monitoring Tools

Several tools and services exist to assist in the monitoring of individuals, accounts or terms, such as <http://www.contextoptional.com/products/> for Facebook. Below is the selected list of monitoring tools for success measure:

#### Alerts

Google Alerts are email updates of the latest relevant Google results (web, news, etc.) based on your choice of query or topic. These can be emailed to your Gmail address or added to your Google Reader: [www.google.com/alerts](http://www.google.com/alerts).

Yahoo alerts offer a similar service: <http://alerts.yahoo.com>.

#### Keyword searches

The following tools search across social media applications.

- Social mention <http://socialmention.com>
- Day mix <http://daymix.com/>
- Who's talkin <http://whostalkin.com/>

#### Social media specific tools

Many tools have been created to help research and monitor specific social media tools. These may be useful for monitoring particular activities on single social media presences. Examples are highlighted in the Choosing a social media tool section of these guidelines.

#### RSS feeds

Subscribe to RSS feeds in Twitter for keywords relating to your Directorate or campaign. It is recommended to use Google Reader to track RSS feeds. Instructions on using Google Reader can be found online.

🔗 Mashable – how to use google reader <http://mashable.com/2008/12/07/how-touse-google-reader/>

🔗 Google reader in plain English video

[http://www.youtube.com/watch?v=VSPZ2Uu\\_X3Y&feature=related](http://www.youtube.com/watch?v=VSPZ2Uu_X3Y&feature=related)

#### Analytics

Analytics software can provide details of websites linking to your Directorate website. This information can help discern where traffic is coming from, including official social media presences or other web and social media sources. By identifying these and reviewing the sources of traffic you can analyse the nature of the links and potentially address issues and engage audiences in ways that meet the needs identified from social media chatter at the source of existing traffic.

#### Google search

View the Google search instructions to improve search results and especially your ability to search within websites to monitor relevant online content.

<http://www.google.com.au/support/websearch/bin/answer.py?answer=136861>

- Social media success measures

Social media is measured in several different ways. Here are some of the metrics commonly used to determine the success of your social media account.

#### Activity Metrics

- bounce rate – number of visitors who enter your site but exit before viewing anything other than home page
- brand mentions – how often your 'brand is mentioned'
- comments and trackbacks
- connections (between members)
- numbers contributors
- interactivity (with other media)
- members, friends, followers – number of people who have 'signed' up to the site
- number of groups (networks/forums)
- page views – number of times a page has been viewed
- referrals – links to your site posted elsewhere
- tags/ratings/rankings
- time spent on site
- virility – spread of posts
- visitors/unique visitors. – number of times a site is viewed and number of individuals

#### Activity Ratios

- frequency: visits, posts, comments by time period
- ratios: member to contributor, posts to comments, active to passive contributors

#### Customer service metrics

- quality and speed of issue resolution
- relevance of content, connections
- satisfaction.

#### Return On Investment Measurements

- cost per lead or cost per prospect
- lead conversion
- lifetime value of customers
- number of leads per period
- number of new product ideas
- number of qualified leads per period
- ratio of qualified to non-qualified leads
- time to qualified lead.

#### Results

- number of mentions (tracked via web or blog search engines)
- positive/negative listing ratios on major search engines
- positive/negative sentiment in mentions.